WILLIS PORTION OF THE WILLIS AVENUE/ SEMET TAR BED SITES IRM

REMEDIAL ACTION WORK PLAN

Prepared For:

Honeywell
101 Columbia Road
P.O. Box 2105
Morristown, NJ 07962

Prepared By:

PARSONS
290 Elwood Davis Road, Suite 312
Liverpool, New York 13088
Phone: (315) 451-9560
Fax: (315) 451-9570

JULY 2008

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

Page

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

SECTION 1

INTRODUCTION

This Remedial Action Work Plan (RAWP) has been prepared in accordance with the requirements of the Order on Consent entered into by Honeywell International, Inc. (Honeywell) and the New York State Department of Environmental Conservation (NYSDEC), effective April 16, 2002 for the Willis Ave./Semet Tar Beds Sites IRM (Willis/Semet IRM). The RAWP includes plans, methodologies and schedule for implementation of the Willis portion of the Willis/Semet IRM.

This RAWP is organized into five sections and three appendices, as described below:

Section 1 – Introduction

Section 2 – Project Organization

Section 3 – Remedial Activities

Section 4 – Monitoring Requirements

Section 5 - Schedule

Appendix A – *Final Request for Proposal Package for the Willis Portion of the Willis/Semet IRM* (Parsons, 2008)

Appendix B – Peak Environmental Remedial Action Work Plan

Appendix C – SWPPP Addendum for 2008 Construction Activities

A detailed site description and history is available in the *IRM Work Plan for the Willis Ave./Semet Tar Beds Sites IRM* (Parsons, 2003).

SECTION 2

PROJECT ORGANIZATION

The purpose of this section is to provide an understanding of the overall project organization and the function and responsibility of various team members to ensure efficient project execution. The key team members and their responsibilities are provided below. A project organization chart is provided as Figure 2.1. Contact information for key team members is provided in Table 2.1.

2.1 NYSDEC

NYSDEC is the lead regulatory agency for this project. Mr. Richard Mustico, P.E. has been designated by NYSDEC as the Project Manager.

2.2 HONEYWELL

Honeywell is responsible for the implementation specified in the Order on Consent. Honeywell has designated Mr. Al Labuz as the Project Manager and primary contact for this project. Honeywell has retained Parsons as its primary design and construction contractor on this project. Mueser Rutledge Consulting Engineers has been retained as the geotechnical designer as a subcontractor to Parsons.

2.3 PARSONS

Parsons will serve as the prime contractor for both design and construction for the IRM. Parsons will manage the design, schedule and execution of the project. The responsibilities of the key Parsons' personnel are described below:

2.3.1 Project Manager

Mr. John Lanier will be the Project manager for this project. Mr. Lanier will be responsible to Honeywell and Parsons Management to ensure the project objectives are met. Mr. Lanier will be responsible for managing subcontractors, maintaining the project schedule, managing the project budget, and ensuring the technical adequacy of the work performed. He will also be the primary point-of-contact for Honeywell on all technical, schedule, and contractual issues.

2.3.2 Design Manager

Mr. Michael Broschart will be the design manager for this project. Mr. Broschart will be responsible for managing all design issues that arise during construction and communicating/ resolving these issues with Honeywell and NYSDEC.

2.3.3 Site Health and Safety Officer

The Site Health and Safety Officer for this project will be Mr. Dale Dolph. Mr. Dolph will ensure that Project Safety Plan is properly prepared and implemented and that all Parsons and subcontractor site personnel are trained according to the site-specific health and safety requirements. Mr. Dolph will conduct periodic health and safety audits of the project and will implement corrective actions in the event that unsafe practices are identified.

TABLE 2.1
KEY CONTACT INFORMATION

COMPANY/ NAME	TITLE	ADDRESS	TELEPHONE/ FAX	E-MAIL
HONEYWELL				
John McAuliffe, P.E.	Syracuse Program Director	5000 Brittonfield Parkway Suite 700 East Syracuse, NY 13057	315/431-4443 x4 (p) 315/431-4777 (f) 315/440-0859 (m)	john.mcauliffe@honeywell.com
William Hague, P.E.	Director, Remediation Design & Construction	101 Columbia Road Morristown, NJ 07962	973-455-2175 (p) 973-455-3082 (f) 973-896-9366 (m)	William.Hague@honeywell.com
Al Labuz	Project Manager	5000 Brittonfield Parkway Suite 700 East Syracuse, NY 13057	315/431-4443 x1 (p) 315/431-4777 (f) 315/420-3505 (m)	al.labuz@honeywell.com
Steve Miller, P.E.	Parsons seconded	290 Elwood Davis Road Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f) 315/382-6297 (m)	steve.miller@parsons.com
NYSDEC				
Richard Mustico	Project Manager	Div. of Environ. Remediation Remedial Bureau D 625 Broadway, 12th Floor Albany, New York 12233-7016	518/402-9676 (p) 518/402-9773 (f)	rxmustic@gw.dec.state.ny.us
PARSONS				
Steve Warren	Program Manager	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f)	stephen.warren@parsons.com
John Lanier	Project Manager	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f)	john.lanier@parsons.com
Alan Steinhoff	Construction Manager	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f)	alan.steinhoff@parsons.com
Jerry Clark	Health and Safety Manager	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/560-2335 (m)	jerry.clark@parsons.com
Paul Blue	Technical Director	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f)	paul.blue@parsons.com
David Steele, P.E.	Certifying Engineer	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f)	david.steele@parsons.com
Mike Broschart	Design Manager	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f)	michael.broschart@parsons.com
Dale Dolph	On Site H&S Officer	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f)	dale.dolph@parsons.com
Matt Warren	QA/QC	290 Elwood Davis Rd Suite 312 Liverpool, NY 13088	315/451-9560 (p) 315/451-9570 (f)	matthew.warren@parsons.com
Mark O'Rourke Peak Environmental, LLC	Construction Sub-Contractor	23 Lake Street PO Box 424 Owego, NY 13827	(607) 687-1234 (607) 687-7445	meorourke@orourkeinc.com
Peter Deming, P.E. Mueser -Rutledge Consulting	Design Sub-Contractor	14 Penn Plaza 225 West 34th Street New York, NY 10122-0002	917-339-9300 (p) 917-339-9400 (f)	pdeming@mrce.com

Figure 2.1

Willis-Semet IRM Organization

NEW YORK STATE
Department of
Environmental Conservation

Project Manager
Richard Mustico, P.E.

Honeywell

Syracuse Program Director
John McAuliffe, P.E.

Director of Remedial Design & Construction
William Hague, P.E.

Project Manager
Al Labuz

PARSONS

Program Manager
Steve Warren

Project Manager
John Lanier

Health & Safety Manager
Jerry Clark

Technical Director
Paul Blue, P.E.

Contracts Manager
Kim Gross

Project Controls
Doug Mayer

Construction/Site Manager
Al Steinhoff

Certifying Engineer
Dave Steele, P.E.

QA/QC
Matt Warren

On-Site H&S Officer
Dale Dolph

Sheet Pile Installation/Civil Subcontractor
Peak Environmental, LLC

Design Manager
Mike Broschart

Geotechnical Design Subcontractor
Mueser-Rutledge Consulting Engineers
Peter Deming, P.E.

SECTION 3

REMEDIAL ACTIVITIES

3.1 STORMWATER/EROSION AND SEDIMENT CONTROLS

The remedial activities to be conducted at the site will require that stormwater controls, erosion prevention measures, and sediment control measures be implemented. Stormwater controls to be used during construction are provided in the specifications and drawings included in Appendix A.

Temporary storm water/erosion and sediment controls will consist of silt fencing to prevent soil or sediment erosion from the land-based support/storage areas and material stockpiles, as shown on Figure 3.1. Storm water from up gradient locations will be routed away from exposed materials or excavation areas. Storm water contact with exposed material will be minimized to the extent practicable.

Floating silt curtains and oil absorbent booms will be deployed around the construction area during fill placement and sheet pile installation, as shown in Figure 3.2. Silt curtains and absorbent booms will be maintained continuously around the work area during construction.

3.2 SITE PREPARATION

Prior to the start of work at the site, Dig Safely New York and other sources will be contacted to identify and mark existing utilities. Stormwater and erosion control structures, as described above, will be erected prior to the start of work at the site.

3.2.1 Field Trailer/Laydown Area

The field trailer/laydown area will be located as shown on Figure 3.3. The area will be set up to provide space for 6 trailers. These trailers will be used to support the construction of the Willis/Semet IRM as well as the Onondaga Lake and Wastebed B/Harbor Brook Pre-Design Investigation (PDI) activities. A laydown area will be constructed adjacent to the support trailers to provided storage for construction materials needed for the IRM.

This component of the project will consist of the following items:

- Light tree clearing;
- Grading (as required);
- Installation of a 1-ft thick crusher run gravel sub-base over stabilization fabric (Mirafi 600x or equivalent);
- Installation of security fencing;
- Installation of electrical supply lines and transformers; and
- Relocation of the current PDI Complex and NYSDEC trailer.

It is anticipated that this effort will be completed during May 2008 to ensure that the required support facilities are in place prior to mobilization of the construction team to minimize potential schedule delays.

3.3 SOIL STORAGE AREAS

Materials excavated during construction will be placed in a lined temporary holding area to decant and dewater. Decanted water will be collected from two collection sumps within the holding area using submersible pumps and discharged through 30 micron bag filters to frac tanks prior to treatment at the Willis Avenue Wastewater Treatment Plant (WWTP). After dewatering is complete, a composite sample(s) will be collected and analyzed for TAL, TCL, and TCLP compounds to determine disposal requirements. Actual number of samples will be determined, with agreement from NYSDEC, based upon volume of material generated. If excavated material is determined to be non-hazardous, it will be hauled to a constructed soil storage area located at the Willis Avenue Site. If the material is determined to be hazardous, it will be transported offsite to an appropriate disposal facility. The storage area will be constructed with a 40 mil geo-membrane liner and bermed to prevent soil and water migration and a 10-mil geo-membrane cover. A low-point sump will be provided for collection of water. The final closure of the storage area will consist of a 12-inch vegetated topsoil layer. During closure of the storage area, the existing stockpile of material generated during construction of the Semet groundwater collection trench will be closed in the same manner. Details of the soil staging area are provided in Figure 3.4.

3.4 DEMOLITION

During construction of the barrier wall and fill placement, demolition/removal of portions of existing piping which crosses the barrier wall alignment and removal of other potential obstructions will be completed as described below.

3.4.1 Remove and Plug Existing Piping

Five existing pipes that extend outboard through the work area will be demolished at the point of intersection with the wall alignment and plugged with grout to prevent loss of ground conditions along the wall alignment. The pipes will be demolished using a spud, or similar technology to break the portion which intersects the barrier wall alignment. Once the pipes have been broken, the ends will be plugged using bags of concrete placed by a diver, and flowable fill will be pumped into the pipes to seal them. Additional details of the plugging operation are provided in Appendix B.

3.4.2 Debris Removal

Following demolition/ plugging of the existing intake pipes described above, the contractor will remove debris and other materials which could interfere with driving of sheet piles. Methods of debris removal are provided in Appendix B.

3.5 BARRIER WALL

3.5.1 Sheetpile Preparation

Sheet piles will be provided in pairs with the center interlock of each pair fully seal-welded. Each sheet pile pair will be coated with epoxy coal tar on each face to the depth indicated on the drawings (Appendix A). Interlock sealant will be applied to one interlock of each welded pair in accordance with the specifications and drawings provided in Appendix A.

Sheet piling will be handled to minimize damage to epoxy coating. During storage, welded pairs will be supported on level blocks not more then 10 ft apart and not more than 2 ft from each end.

3.5.2 Sheetpile Installation

The welded pairs will be installed using a vibratory hammer. The contractor will provide a template, or frame, for aligning, supporting, and maintaining sheet piling in the proper position during setting and driving. Once set, sheet piles will be driven to tip elevations, as shown on the drawings. A pile driving record will be maintained for each welded pair. The record will include driving information, as specified on the drawings.

3.5.3 Cathodic Protection

150-pound zinc anodes will be installed for galvanic protection of the sheet piling in the webs both inboard and outboard of the wall. Anodes will conform to federal specification MIL-A-18001H, or approved equal. Anodes will be spaced at 30-ft intervals on each face of the sheet piling. A protective steel tube will be installed around each anode, as shown on the drawings, to prevent damage during construction.

3.6 INLAND FILL

3.6.1 Geo-textiles

Geo-textile fabric will be installed inside of the barrier wall alignment prior to fill placement. The joints of the fabric will be installed perpendicular to the shoreline and sewn. Overlap joints between panels will be 5 ft or greater and will be pinned in place and anchored to maintain tension during fill placement. A reinforcing geo-grid fabric will be maintained on site and ready for installation with the geo-textile fabric in the event that a mud wave action occurs during fill placement.

3.6.2 Lightweight Fill

Lightweight fill will be placed west to east using low ground pressure equipment to elevation 365.5 once the geo-textile fabric is in place. The sub-grade on the leading edge of the fill will be monitored for displacement or mud waves in accordance with the contract drawings. Consolidation of the fill using a vibrating pile will be limited to the deep water area while the more shallow areas will be placed in lifts and rolled accordingly.

3.6.3 Work Platform

A 1-ft layer of structural gravel will be placed once the lightweight fill has been filled to its design elevation. This structural layer will be installed with a one percent slope towards the lake for drainage. One barrier wall sheet will be cut to el. 366.5 every 50 ft to allow the precipitation to drain. A 15-ft wide strip of topsoil and seed will be placed abutting the barrier wall to mitigate any silt run-off.

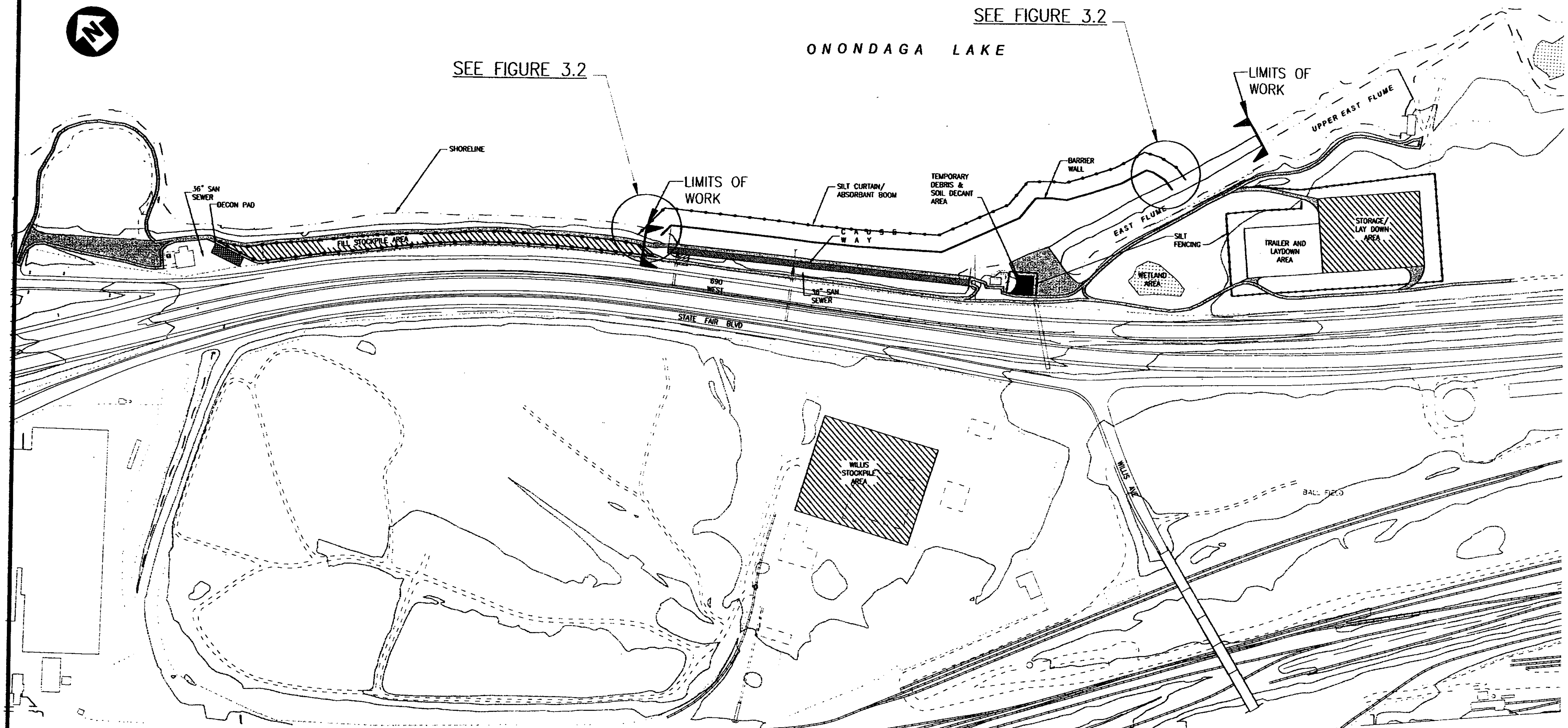
3.7 SITE RESTORATION AND DEMOBILIZATION

3.7.1 Site Restoration

Areas inboard of the work platform disturbed during construction activities will be restored to their original condition. Restoration activities will include re-grading, topsoil installation and seeding. Design Section 4 will be restored in accordance with the Restoration/Mitigation Work Plan which is currently being reviewed by NYSDEC.

3.7.2 Demobilization

Equipment and excess materials used during construction activities will be decontaminated (as required) and removed from the site following project completion. Sediments collected during the decontamination process will be disposed of at the Willis Avenue stockpile area.



LEGEND:

- FENCE
- RAILROAD
- ELEVATION CONTOUR
- DIRT/GRAVEL ACCESS ROADS
- SILT CURTAIN/ABSORBANT BOOM
- SILT FENCE

SITE CONDITION NOTES:

1. CLIENT WILL PROVIDE IMPROVED AREA FOR CONTRACTOR'S OFFICE AND BREAK TRAILERS. POWER FOR TRAILERS WILL BE AVAILABLE.
2. CONTRACTOR WILL PROVIDE PORTABLE SANITATION FACILITIES.
3. CONTRACTOR WILL PROVIDE ACCESS THROUGH THE WORK AREA FOR AUTHORIZED THIRD PARTIES. CONTRACTOR WILL IMPLEMENT ROAD CONES AND SIGNAGE TO MANAGE TRAFFIC.
4. CONTRACTOR WILL PROTECT THE ONONDAGA COUNTY 36" AND 12" SEWER LINES AND THE HONEYWELL 24" SEWER LINE WITHIN THE EXTENTS OF THE PROJECT WORK AREA.
5. CONTRACTOR WILL MAINTAIN AND SUPPRESS VISIBLE DUST ON SITE ACCESS ROADS. IN ADDITION, CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE CONDITION AND CLEANLINESS TO THE ROUTE 690 OFF RAMP ENTRANCE.
6. CONTRACTOR SHALL PRACTICE PROPER HOUSEKEEPING AND STOCKPILE MANAGEMENT.
7. CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATION WITH OCWA TO OBTAIN SITE WATER SOURCE.
8. CONTRACTOR SHALL PROVIDE SAFETY FENCING TO ISOLATE AND PREVENT ACCESS TO SPECIFIC WORK ZONES.
9. CONTRACTOR IS RESPONSIBLE FOR ITS OWN SITE SECURITY INCLUDING LOCKING AND SECURING EQUIPMENT AND MATERIALS.
10. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ACCESS TO ONONDAGA LAKE. OWNER WILL NOT PROVIDE A DOCKING AREA
11. CONTRACTOR SHOULD BE AWARE THAT THE SITE CONTAINS EXISTING BURIED UTILITIES, EXPOSED UTILITIES AND MANHOLES. CONTRACTOR WILL PROTECT ALL EXISTING UTILITIES.

FILE NAME: P:\HONEYWELL -SYR\444287 WILLIS AVENUE WALL\10 TECHNICAL CATEGORIES\10.0 CAD\SK444287-C-001.DWG
PLOT DATE: 6/12/2008 2:16 PM PLOTTED BY: WINTERS, CHRIS

FIGURE 3.1

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

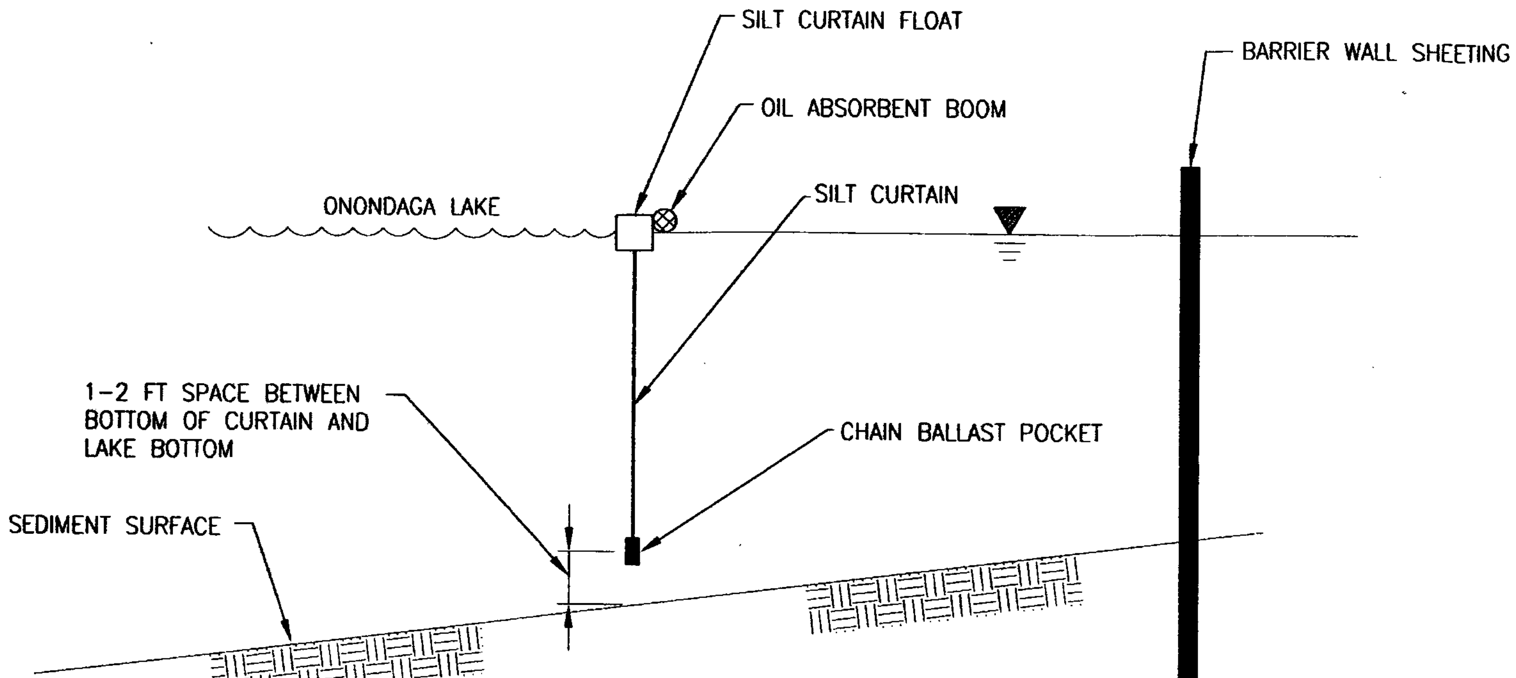
WILLIS IRM SITE ACCESS PLAN

Honeywell

EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

PARSONS

290 ELWOOD DAVIS ROAD • SUITE 312 • LIVERPOOL, N.Y. 13088 • 315/451-9560
OFFICES IN PRINCIPAL CITIES

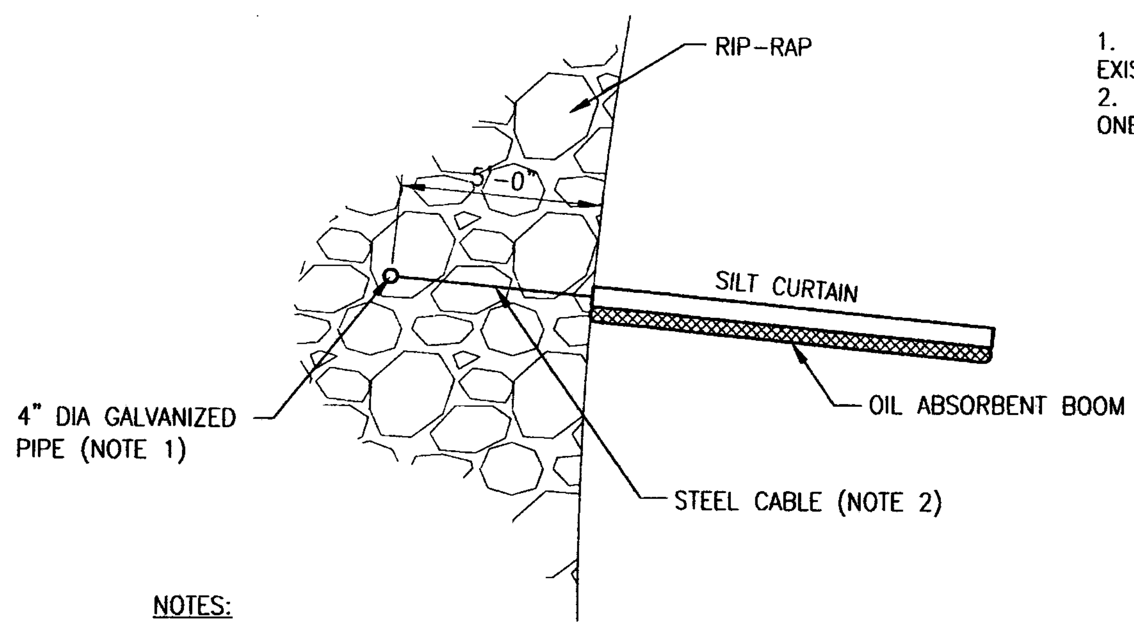


NOTE:

SILT CURTAIN ANCHORS NOT SHOWN FOR CLARITY. CONTRACTOR TO ANCHOR THE SILT CURTAIN TO SEDIMENT SURFACE EVERY 100 FT FROM TOP OF CURTAIN.

TYPICAL SILT CURTAIN DETAIL

NTS



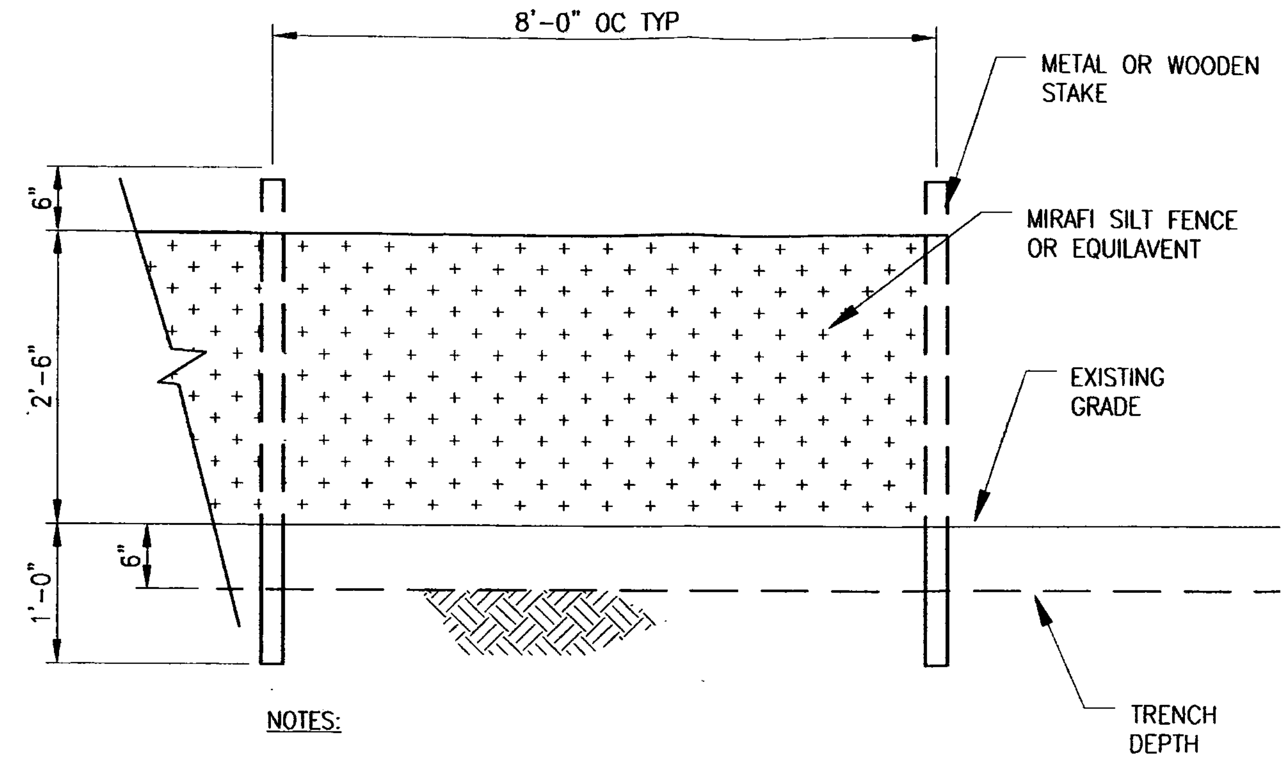
NOTES:

1. 4" GALVANIZED PIPE TO BE DRIVEN DOWN TO A MINIMUM DEPTH OF 4'-0", WITH AN EXTENSION ABOVE GRADE OF 5'-0".

2. STEEL CABLE SHALL BE 1/2" 6x7 STANDARD COARSE LAID WIRE ROPE, WITH A MINIMUM BREAKING STRENGTH OF 18,000 LBS.

TYPICAL SILT CURTAIN ANCHORING SYSTEM

NTS



NOTES:

1. CONTRACTOR TO BURY SILT FENCE SIX INCHES BELOW EXISTING GRADE.
2. CONTRACTOR TO DRIVE METAL OR WOODEN STAKES ONE FOOT BELOW EXISTING GRADE.

TYPICAL SILT FENCE DETAIL

NTS

FIGURE 3.2

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

WILLIS IRM SITE
ACCESS PLAN DETAILS

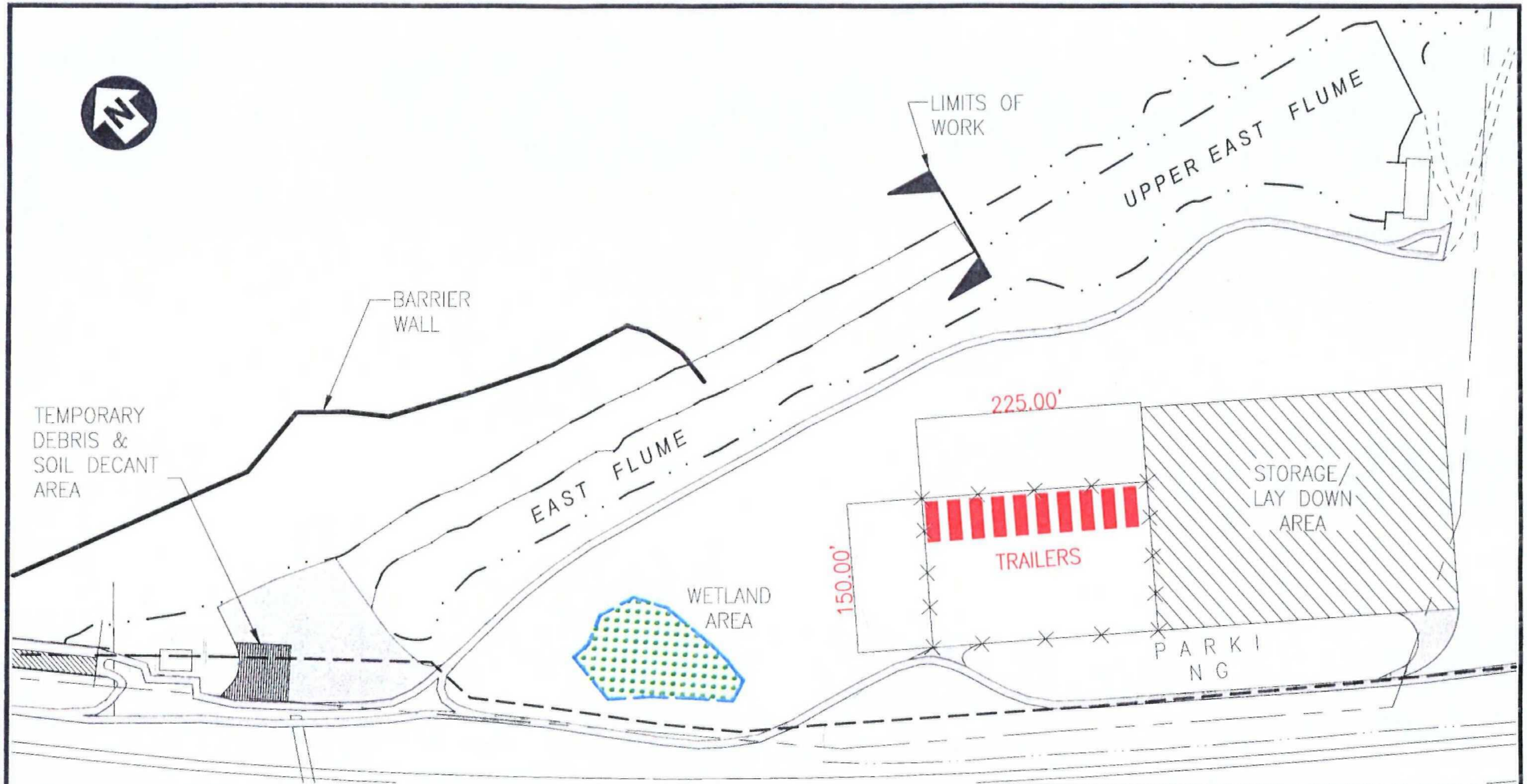
Honeywell

EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

PARSONS

290 ELWOOD DAVIS ROAD • SUITE 312 • LIVERPOOL, N.Y. 13088 • 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\444287 WILLIS AVENUE WALL\10 TECHNICAL CATEGORIES\10.0 CAD\SK444287-C-002.DWG
PLOT DATE: 5/27/2008 12:37 PM PLOTTED BY: RUSSO, JILL



OPTION 1 – FIELD TRAILERS

TRAILER OCCUPANCY

1. PARSONS CONSTRUCTION MANAGEMENT (1)
2. PARSONS PDI (2)
3. OBG (2)
4. DEC (1)
5. CONTRACTOR'S (4)

150 75 0 150 300

SCALE: 1"=150'

FILE NAME: P:\HONEYWELL -SYR\742211 – WILLIS-SEMET\CAD\2211G07.DWG
PLOT DATE: 5/27/2008 12:40 PM PLOTTED BY: RUSSO, JILL

FIGURE 3.3

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

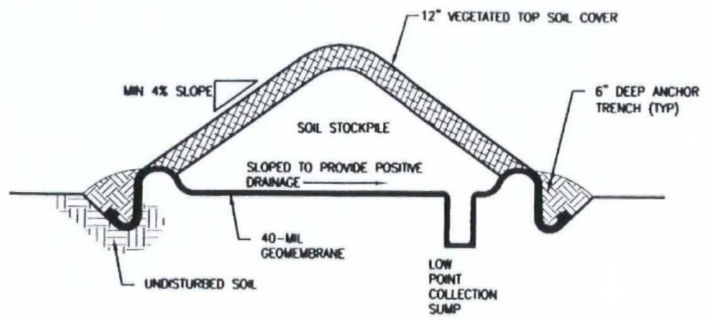
FIELD TRAILER/LAYDOWN AREA DETAIL

Honeywell

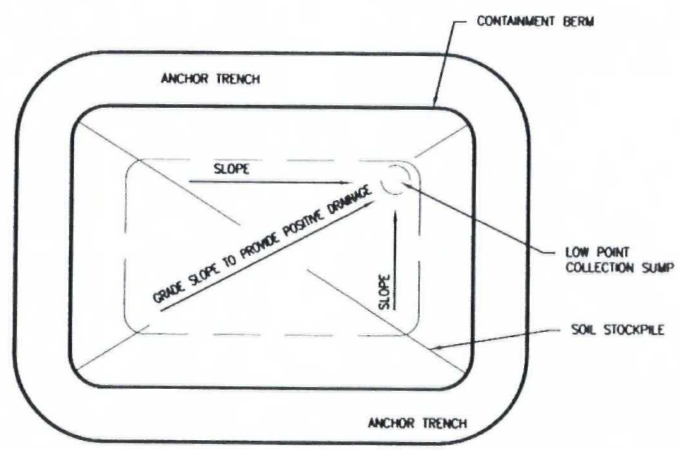
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

PARSONS

290 ELWOOD DAVIS ROAD • SUITE 312 • LIVERPOOL, N.Y. 13088 • 315/451-9560
OFFICES IN PRINCIPAL CITIES



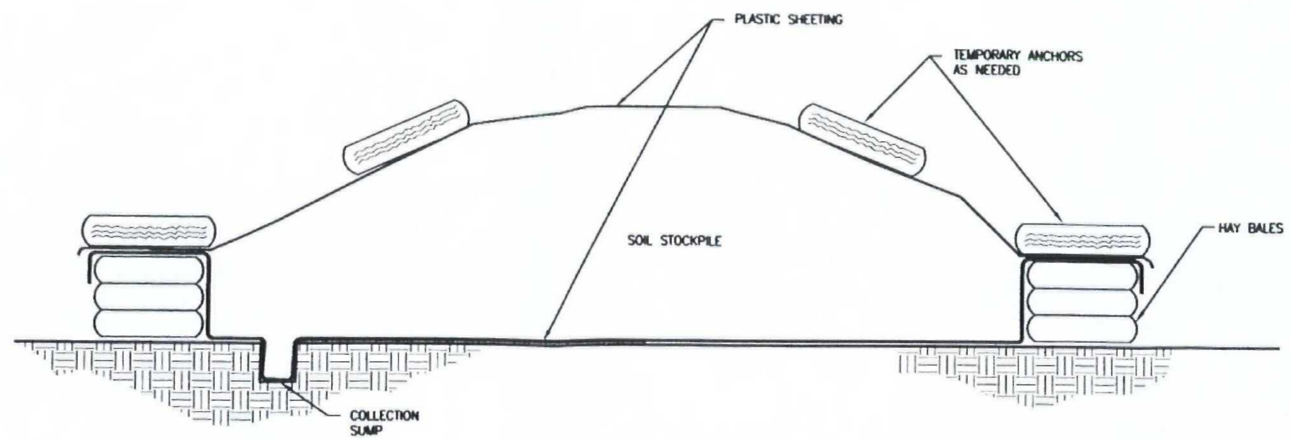
ELEVATION



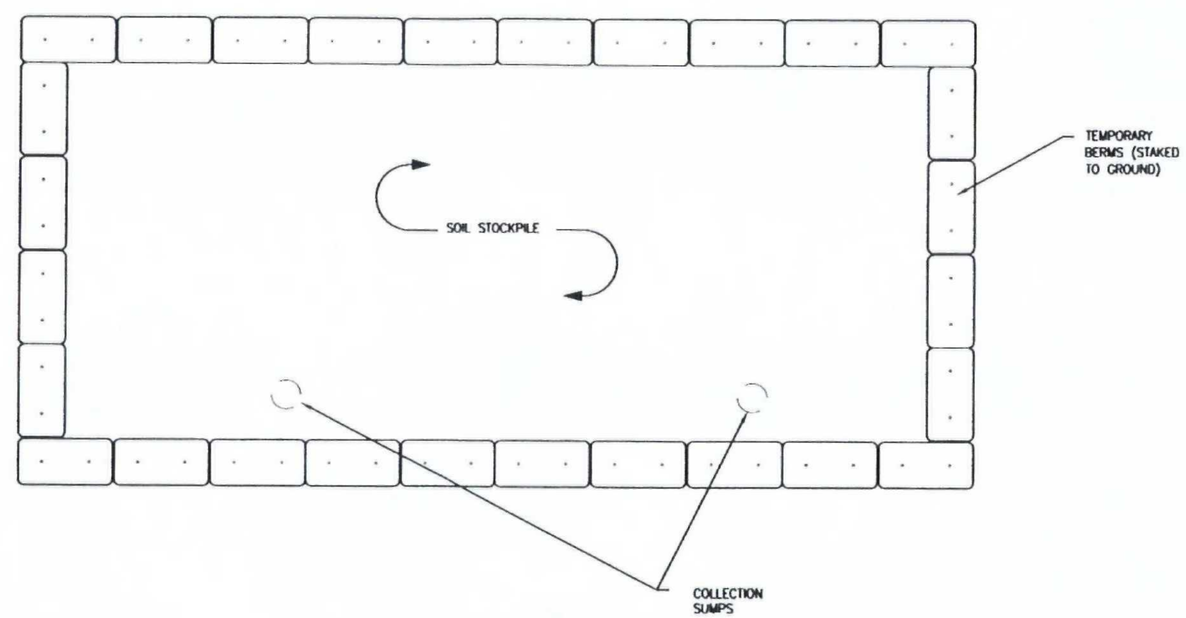
PLAN

WILLIS AVENUE SOIL STAGING AREA

DETAIL 1 / –
SCALE: NTS



ELEVATION



PLAN

TEMPORARY DEBRIS & SOIL DECANT AREA

DETAIL 2 / –
SCALE: NTS

FIGURE 3.4

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

STOCKPILE DETAIL

Honeywell

EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

PARSONS

290 ELWOOD DAVIS ROAD • SUITE 312 • LIVERPOOL, N.Y. 13088 • 315/451-9560
OFFICES IN PRINCIPAL CITIES

FILE NAME: P:\HONEYWELL -SYR\742211 - WILLIS-SEMET\CAD\742211-C015A-1.DWG
PLOT DATE: 5/27/2008 12:41 PM PLOTTED BY: RUSSO, JILL

SECTION 4

MONITORING

4.1 BARRIER WALL INSTRUMENTATION

4.1.1 Monitoring Clusters

Instrumentation clusters will be installed at nine locations along the barrier wall alignment. Each cluster will consist of two inclinometers, one extensometer, one piezometer with four depth intervals, one sheet pile deformation point, one tilt meter, and five to six settlement plates. Each cluster will provide data for sheet pile movement, lateral and vertical fill movement and hydraulic pressures due to groundwater.

4.1.2 Deflection Monitoring Point

Deflection monitoring points (DMP's) will be installed at the top of driven sheets every 50 ft. Each DMP will consist of a survey prism bolted to a steel bracket that is welded to the sheet piling. The prism locations will be surveyed periodically to measure sheet movement at the top of the barrier wall.

4.1.3 Vibration Monitoring

A program to monitor vibratory forces on the causeway structure will be implemented during sheetpile installation. Seismic monitors will be installed on the beam structure of the causeway and moved weekly to record vibration levels in the area adjacent to the sheetpile leading edge. These readings will be summarized in a final report after wall construction is complete.

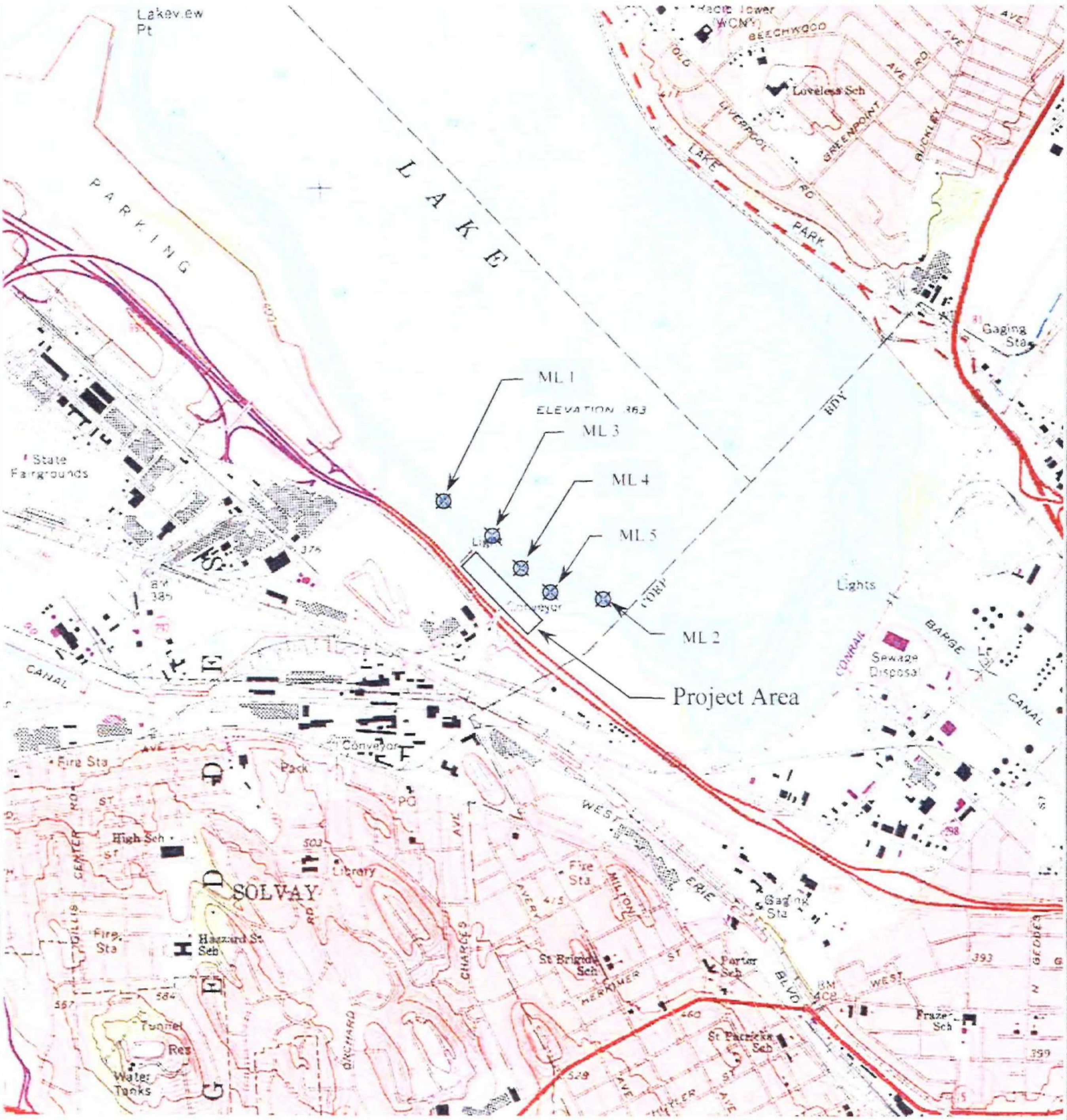
4.2 TURBIDITY MONITORING

The silt curtain system will allow water to enter and exit the work area, while minimizing the impacts from re-suspended materials (see Appendix C). To ensure that the silt curtains are effectively containing re-suspended sediments within the work area, and to provide technical data for use in evaluation of water quality monitoring during the Onondaga Lake dredging operations, water quality monitoring for turbidity is recommended.

The water quality monitoring will be conducted at three fixed locations in Onondaga Lake approximately 50 feet outboard of the silt curtain and at one background location approximately 500 feet from the work area. Background locations will be located approximately 500 feet northwest and 500 feet southeast of the site (Locations 1 & 2). Compliance monitoring locations (Locations 3, 4, & 5) will be evenly spaced along the length of the silt curtain (Figure 4.1). The turbidity monitoring will include collection of total suspended solids (TSS) samples and real-time monitoring using a handheld turbidy monitor, such as the Lamotte digital turbidity meter. Samples will be collected one time each day during construction of the barrier wall and placement of light-weight fill from the midpoint of the water column (50% of water depth) at each respective location. The background sample location will be selected each day based on wind direction, as observed at the Lakeside Meteorological (MET) tower located at the Willis

Avenue site. TSS samples will be submitted to the selected laboratory for analysis with an expedited turn-around-time.

Turbidity and TSS readings (measured at compliance locations) will be collected and compared to background readings (measured at Locations 1 & 2). If daily TSS reading exceed 5 mg/l above background levels, site conditions will be evaluated to determine the cause of the exceedance. If the exceedance is determined to be related to general lake conditions, no further action will be initiated (e.g., significant TSS concentrations in the water column caused by storm events). If exceedance is determined to be related to site activities, the construction manager, in consultation with NYSDEC, will initiate an inspection of site controls to determine what corrective action is required (e.g., silt curtain repair) and implement the appropriate action.



New York Quadrangle

LATITUDE: N 43° 4.05' 0"
LONGITUDE: W 76° 11.89' 0"
SCALE: 1" = 2000'

SOURCE: U.S.G.S. SYRACUSE WEST QUADRANGLE

Legend
ML – Monitoring Location

FIGURE 4.1

Honeywell Willis/Semet IRM
Syracuse, New York

TURBIDITY MONITORING LOCATION MAP

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, NY 13088 PHONE: (315) 451-9560

P:\HON-SYR\443850\graphics\turbiditymap.ppt

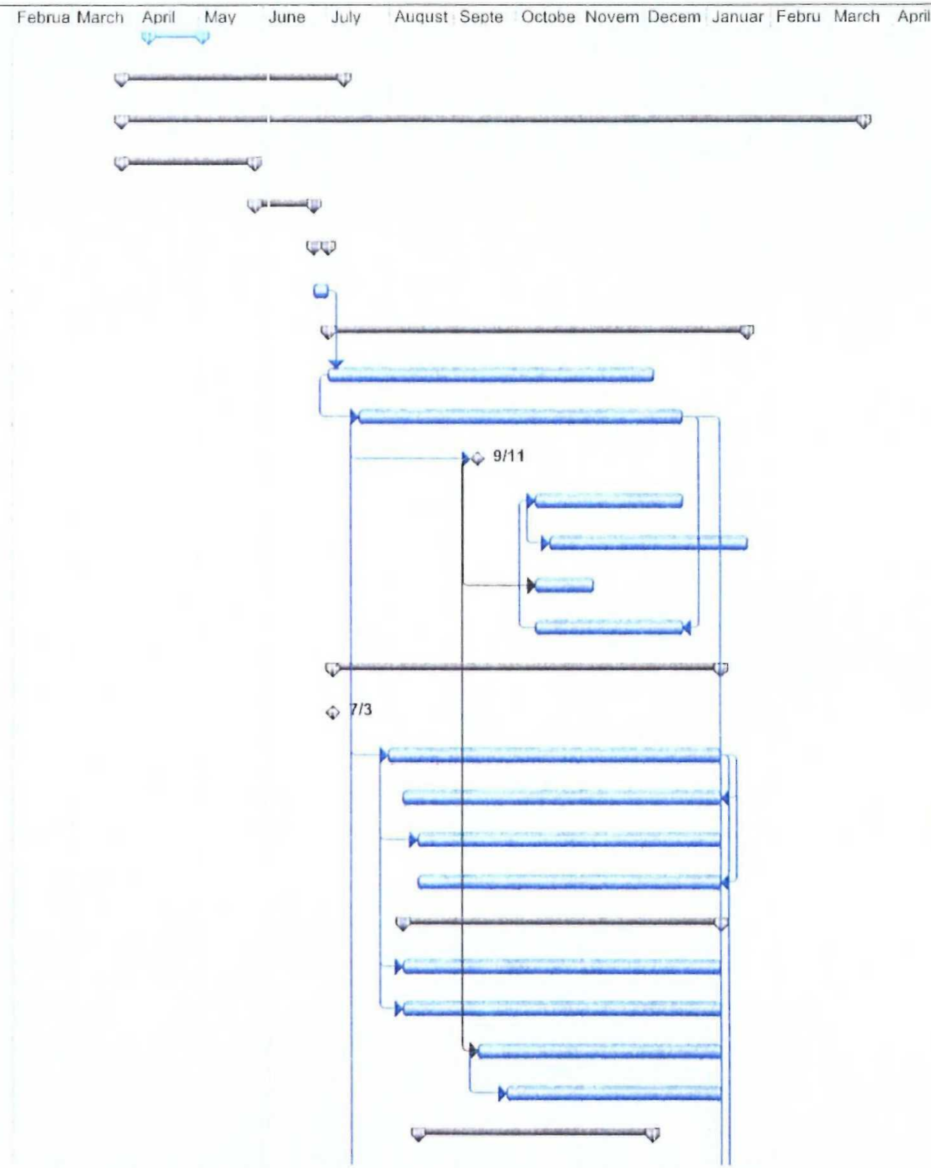
SECTION 5

SCHEDULE

A detailed project schedule is presented in Figure 5.1.

FIGURE 5.1- WILLIS BARRIER WALL SCHEDULE

ID	Task Name	Duration	Start	Finish	Predecessors
1	**TEMPORARY COLLECTION TRENCH**	**20 days**	**Mon 4/7/08**	**Fri 5/2/08**	
3	**PRE-MOBE CONSTRUCTION**	**75 days**	**Tue 3/25/08**	**Wed 7/9/08**	
30	**WILLIS CONSTRUCTION**	**250 days**	**Tue 3/25/08**	**Tue 3/17/09**	
31	**CONTRACTING**	**45 days**	**Tue 3/25/08**	**Tue 5/27/08**	
38	**SUBMITTAL PROCESS**	**20 days**	**Wed 5/28/08**	**Tue 6/24/08**	
45	**MOBILIZATION**	**5 days**	**Wed 6/25/08**	**Tue 7/1/08**	
48	SWPPP Activities	5 days	Wed 6/25/08	Tue 7/1/08	47SS
49	**PLACE INLAND FILL**	**139 days**	**Wed 7/2/08**	**Mon 1/19/09**	
50	Install geotextiles	110 days	Wed 7/2/08	Fri 12/5/08	48
51	Place lightweight fill	110 days	Thu 7/17/08	Fri 12/19/08	50SS+10 days
52	Begin deep water fill	0 days	Thu 9/11/08	Thu 9/11/08	51SS+40 days
53	Install settlement plates	50 days	Fri 10/10/08	Fri 12/19/08	56SS
54	Monitor settlement plates	64 days	Fri 10/17/08	Mon 1/19/09	53SS+5 days
55	Consolidate lightweight fill	20 days	Fri 10/10/08	Thu 11/6/08	52SS+20 days
56	Place working platform	50 days	Fri 10/10/08	Fri 12/19/08	51FF
57	**INSTALL BARRIER WALL**	**128 days**	**Thu 7/3/08**	**Tue 1/6/09**	
58	Begin receipt of sheets	0 days	Thu 7/3/08	Thu 7/3/08	46FS+2 days
59	Install sheeting	110 days	Thu 7/31/08	Tue 1/6/09	51SS+10 days
60	Install guard rail	105 days	Thu 8/7/08	Tue 1/6/09	59FF
61	Install monitoring instruments	100 days	Thu 8/14/08	Tue 1/6/09	59SS+10 days
62	Install cathodic protection	100 days	Thu 8/14/08	Tue 1/6/09	59FF
63	**MONITORING**	**105 days**	**Thu 8/7/08**	**Tue 1/6/09**	
64	Survey deflection monitoring points	105 days	Thu 8/7/08	Tue 1/6/09	59SS+5 days
65	Incl.+tiltmeter baseline	105 days	Thu 8/7/08	Tue 1/6/09	59SS+5 days
66	Install borehole instr.	80 days	Fri 9/12/08	Tue 1/6/09	52SS
67	Monitor borehole inst.	70 days	Fri 9/26/08	Tue 1/6/09	66SS+10 days
68	**PIPE DEMOLITION**	**79 days**	**Thu 8/14/08**	**Thu 12/4/08**	

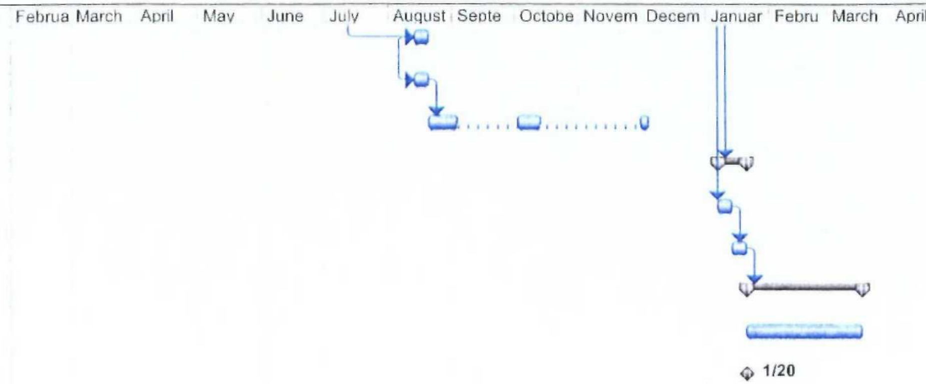


Project: Willis Construction DEC 6.3.0
Date: Tue 6/3/08

Submittal Review	Progress	Submittal Deadline
Task	Milestone	External Project
Split	Summary	Ex. Project Summary

FIGURE 5.1- WILLIS BARRIER WALL SCHEDULE

ID	Task Name	Duration	Start	Finish	Predecessors
69	Install water treatment system	5 days	Thu 8/14/08	Wed 8/20/08	51SS+20 days
70	Install lined stockpiles	5 days	Thu 8/14/08	Wed 8/20/08	69SS
71	Remove intake and storm pipes	20 days	Thu 8/21/08	Thu 12/1/08	70
72	**DEMOBILIZATION**	**10 days**	**Wed 1/7/09**	**Tue 1/20/09**	**59**
73	Site restoration	5 days	Wed 1/7/09	Tue 1/13/09	51
74	Equipment demobilization	5 days	Wed 1/14/09	Tue 1/20/09	73
75	**PROJECT CLOSEOUT**	**40 days**	**Tue 1/20/09**	**Tue 3/17/09**	**74**
76	Prepare final engineering report	40 days	Wed 1/21/09	Tue 3/17/09	
77	Begin long term monitoring	0 days	Tue 1/20/09	Tue 1/20/09	



Project: Willis Construction DEC 6.3.0
Date: Tue 6/3/08

Submittal Review	Progress	Submittal Deadline
Task	Milestone	External Project
Split	Summary	Ex. Project Summary

APPENDIX A

FINAL REQUEST FOR PROPOSAL PACKAGE FOR THE WILLIS PORTION OF THE WILLIS/SEMET IRM (PARSONS, 2008)

REQUEST FOR PROPOSAL (RFP) PACKAGE FOR THE WILLIS PORTION OF THE WILLIS AVENUE/SEMET TAR BEDS SITES IRM HYDRAULIC BARRIER WALL

Syracuse, New York

PREPARED FOR:

Honeywell

101 Columbia Road
P.O. Box 2105
Morristown, NJ 07962

PREPARED BY:

PARSONS
290 Elwood Davis Road, Suite 312
Liverpool, New York 13088

MUESER RUTLEDGE CONSULTING ENGINEERS
14 Penn Plaza
225 West 34th Street
New York, New York 10122-0002

FEBRUARY 2008
REVISED MAY 2008

PARSONS

REQUEST FOR PROPOSAL

PLEASE INCLUDE THE IDENTIFICATION BELOW ON ALL CORRESPONDENCE
RFP NUMBER: 444850.30002.00
ISSUE DATE: FEBRUARY 15, 2008

COMPANY: PARSONS ENGINEERING OF NEW YORK, INC.

CLIENT: HONEYWELL

To:

ABC Company
123 Street Road
Anytown, US 12345
Attn: John Doe

PLEASE MAIL PROPOSAL/CORRESPONDENCE AND REFER ANY QUESTIONS TO:	CONTRACT ADMINISTRATOR / BUYER:
CONTRACT ADMINISTRATOR	NAME:
PARSONS ENGINEERING OF NEW YORK, INC.	EMAIL:
290 ELWOOD DAVIS ROAD, SUITE 312	TELEPHONE:
LIVERPOOL, NY 13088	FAX:

A SITE VISIT IS SCHEDULED FOR:

February XX, XXXX at XX:XX

PLEASE SUBMIT QUESTIONS, AS PER THE INSTRUCTIONS TO BIDDERS, NO LATER THAN:

COB, on February XX, XXXX

PROVIDE AN ELECTRONIC COPY OF YOUR PROPOSAL BY E-MAIL OR FAX NO LATER THAN:

COB, on February XX, XXXX

Please submit an original "hard copy" and three (3) hard copies of your proposal to the address listed above by the close of the next business day.

TABLE OF CONTENTS
THIS REQUEST FOR PROPOSAL CONTAINS THE FOLLOWING SECTIONS:

Section A

Statement of Work

(Not Included)

Section C

Submission Form

(Not Included)

Section E

Contractor Safety Evaluation Instructions Letter

(Not Included)

Section G

Subcontract Terms and Conditions

(Not Included)

Section I

Proposal Letter Format

(Not Included)

Section J

Technical Specifications

- 01100 Remediation Construction Requirements
- 01620 Safety, Health & Emergency Response
- 02100 Clearing and Grubbing
- 02140 Construction Water Management
- 02219 Material Excavation, Consolidation and Disposal
- 02222 Excavation
- 02223 Backfilling
- 02370 Erosion Control
- 02457 Steel Sheet Pile Installation
- 02990 Finish Grading

TABLE OF CONTENTS

1 PROJECT ADMINISTRATION

1.1 SCOPE

1.1.1 Summary

1.1.1.1 The Remediation Construction Requirements document summarizes Honeywell's typical expectations regarding Project Administration and Construction Management activities for Remedial Action Work performed for Honeywell.

1.1.1.2 In addition to the applicable requirements set forth in the other Contract Documents the Contractor shall adhere to the requirements listed in this document, unless otherwise specified.

1.1.1.3 This document is generic in nature and shall be used in conjunction with the Specification 01010 Summary of Work (Scope of Work Document)to determine which sections of this document are applicable to a given project.

1.1.1.4 This document is arranged into 9 sections and presents Honeywell's expectations regarding the work defined by each section, as may be applicable to the scope of work, as follows:

1. General Requirements: Activities and deliverables that potentially impact all phases of the Work.
2. Bidding & Contract Award: Section defines non-commercial aspects of the bidding and contract award process.
3. Site Management: Activities and deliverables for various post-contract award Work ongoing field support activities.
4. Pre-Construction Work: Work activities performed post-contract award and before mobilization is permitted.
5. Mobilization & Site Preparation: Activities to be completed before commencing field Construction Work.
6. Construction Work: Activities and deliverables Civil and Mechanical Construction Work.
7. Startup & Commissioning: Turnover requirements for process, monitoring, or other mechanical / electrical / control systems.
8. Site Restoration & Demobilization: Activities to be completed before Contract can be closed-out.
9. Contract Closeout: Final project activities and deliverables.

1.1.2 Reference Documents

1.1.2.1 The Construction Documents listed in the standard Honeywell Lump Sum Contract under Article I.2 define the Project scope of work.

1.1.2.2 Existing topographic information is for reference only. Actual topography may vary. Verify actual topographic information as necessary.

1.1.3 Definitions

1.1.3.1 The following terms, as defined below, shall have the same meaning throughout the Contract Documents.

Assembly: Complete group of Products combined into a single Operating Unit to simplify field installation.

Bidder: Any contractor that is providing bids for a Honeywell issued Request For Proposal.

Equal: Products or methods that are different from those specified in the Contract Documents and determined to be equal as agreed to in writing by Honeywell.

Completion of Work: Completion of project task and project shall be defined in the Technical Specifications (Section IV). Completion of a work task or the project will be achieved once all the criteria contained in the Technical Specifications have been met. The term substantially complete will also be defined in the Technical Specifications.

Construction Manager (CM): Contractor's Construction Manager or their designee authorized to manage the day-to-day activities of the Contractor's workers and Subcontractors and act as Contractor's agent for all field related Work.

Construction Project Manager (CP): Contractor's Project Manager or their designee authorized to act as their agent for all Project related activities.

Consumables: Those Work elements that may or may not be specifically detailed in the Contract Documents but are considered necessary to complete the Work as defined by the Contract Documents. Consumables shall include, but not be limited to, small tools, accessories, fabrication supplies, fuel, gasses, lubricants, etc.

Contract Documents: Shall include: Contract, General and Special Conditions to the Contract, Contract Exhibits, Instruction to Bidders document, Remediation Construction Requirements (this document), Drawings, Specifications, Contractor's Proposal(s), Purchase Order and subsequent revisions, Award Letter, Attachments, Addenda and Construction Change Orders.

Contractor: The successful bidder named in the Contract as Contractor, their subsidiaries, assigns, officers, employees, Subcontractors, suppliers and designees.

Engineer: Refers to the Design Engineering Firm of record for the project or their authorized designee.

Health and Safety Officer (HSO): Contractor's designated individual or organization responsible for all site health and safety issues.

Honeywell: Honeywell International, Inc. their subsidiaries, assigns, officers, employees, and designees.

Incidentals: Those Work elements that may or may not be specifically detailed in the Contract Documents but are considered necessary to facilitate the Work as defined by the Contract Documents. Incidentals shall include, but not be limited to: home office support; field office and sanitary facilities; tools; equipment; PPE; supplies; wage burdens; insurance; transportation; freight; electrical power; water supply; monitoring, inspection & testing; sanitary; telephone, facsimile, etc.

Machinery: Refers to process equipment, pumps, mixers, air movers, etc.

Products: Any materials, machinery, equipment or supplies that are needed to accomplish the Work.

Project: The Scope of Work performed within the constraints defined by the Contract Documents.

Project Engineer (PE): Honeywell Project Engineer or their designee authorized to act as their liaison for all project related activities.

Project Manager (PM): Honeywell Project Manager or their designee authorized to act as their agent for all project related activities.

Purchasing Representative (Manager): Honeywell Purchasing Representative that will be responsible to handle all material management issues related to the Request for Proposal, issuance of the Purchase Order and award of the Contract.

QA/QC Engineer: Honeywell's designated individual or organization responsible for all site QA/QC requirements.

Site Superintendent (SS): Honeywell Site Superintendent or their designee authorized to act as their field Work overseer liaison for all field related activities.

Structures: Structures include, but are not limited to, foundation, buildings, machinery, supports, platforms, paving, secondary containment, utility services and piping both above and below grade.

Subassembly: Partial group of Products combined into multiple Subassemblies. When combined, the Subassemblies form a complete Assembly.

Subcontractor: Organization or individual having an Agreement with the Contractor to perform some portion of the Work.

System: One or more Products, Machinery Elements, Assemblies, and appurtenances that perform a defined process.

Temporary Work: Nonpermanent Work that may or may not be specifically detailed in the Contract Documents but is considered necessary to construct the Work as defined by the Contract Documents. Temporary Work shall include, but not be limited to, temporary lights; temporary utility connections, decontamination facilities; temporary containment areas; fence and gates; site security measures; construction roads and site entrance; lay-down area; secure storage; soil erosion control; construction water control; etc.

Waste: May include hazardous and non-hazardous soils, sediments, drill cuttings, groundwater, wastewater, residues, drummed wastes, chemicals, RCRA empty drums, cylinders, disposable personal protective equipment (PPE), decontamination fluids, and construction debris, etc.

Work Area: That area that lies within a perimeter as delineated by the Contract Documents.

Work: All material, equipment, labor, supervision, consumables, incidentals and temporary work, necessary for a complete and functional end product ready for its intended use, as defined by the Contract Documents.

1.2 CONSTRUCTION SCHEDULE

1.2.1 Construction Schedule Requirements

1.2.1.1 Furnish and update itemized bar chart schedules as indicated.

1. Clearly indicate weekly manpower loading for direct, indirect, and subcontract labor and the scheduled start and completion dates for each task item.
2. Schedule must allow for all Work activities, meetings, regulatory permit acquisition, daily site required permit acquisition (for operating facilities), incidental and temporary work activities.
3. Schedule must allow for normal inclement weather at the job site location during the progress of the Work.
4. Schedule tasks shall be itemized in sufficient detail to accurately track the Work as it progresses and shall directly correlate with the Scope of Work document and Contractor's Proposal (Section I Table I-1).
5. Each schedule task shall be named as indicated in the Scope of Work and shall also identify Honeywell's Code of Account (COA) designation(s).
6. Schedule tasks or subtasks not specifically identified in the Scope of Work shall be named by Contractor, shall be grouped under the appropriate Honeywell designated task and shall be assigned the same COA as the top level COA.

1.2.1.2 Submit baseline schedule within five workdays of award of contract

1.2.1.3 Submit updated Construction Progress schedule at each billing cycle to comply with project requirements.

1.2.1.4 Honeywell reserves the right to accept or reject Contractor's updated schedule.

1.2.1.5 Honeywell will not grant weather related schedule extensions unless unusually abnormal weather occurs that can be documented.

1.2.1.6 Submit historical weather data as supporting documentation.

1.2.2 Work Hours

1.2.2.1 Work schedules shall be based, at a minimum, on five 8-hour days 40 hours per week, alternate straight-time work hours (e.g. four 10-hour days or working six-days per week) are subject to Honeywell's written acceptance.

1.2.2.2 Contractor wishing to Work overtime or on a modified workday schedule on its own account (at no additional cost to Honeywell), must obtain Honeywell Site Superintendent's written approval three workdays prior to performing such Work.

1.2.2.3 Short unscheduled overtime will be left to the Honeywell Site Superintendent's discretion and approval.

1.2.2.4 Submit written request for overtime at least three workdays prior to required workday or workweek extension.

1.2.2.5 Overtime, when requested and authorized in writing by Honeywell, will be reimbursed to the Contractor on a Cost Plus basis, or as otherwise mutually agreed to in writing. In cases where overtime is authorized for the purposes of schedule compression, Honeywell will reimburse Contractor for the overtime portion of the labor costs.

1.2.3 Baseline Construction Schedule

1.2.3.1 Detailed Baseline Construction Schedule shall:

1. Itemize all major Work items consistent with Contractor's proposal.
2. Establish baseline milestone dates for completion of major Work items.

1.2.4 Construction Progress Schedules

1.2.4.1 Submit to Honeywell for approval, any progress schedule that may adversely impact key milestone dates or the previously Honeywell accepted completion date prior to implementing the new schedule.

1.3 FINANCIAL

1.3.1 Contract Base Price

1.3.1.1 Contract Base price shall be the amount indicated on the executed Agreement between Contractor and Honeywell as confirmed by Honeywell's issuance of a Purchase Order.

1.3.2 Billing Schedule

1.3.2.1 Prepare an earned value estimate that indicates Contractors estimated progress billings during the entire Project duration, itemized for each billing cycle.

1.3.2.2 Submit preliminary Billing Schedule with Proposal.

1.3.2.3 Submit revised Billing Schedule to Honeywell at Kickoff Meeting then monthly thereafter with invoice showing incremental and total quantity of work performed and percent completed at end of billing cycle.

1.3.3 Invoicing

1.3.3.1 Invoice format shall follow the breakdown in the Bid Table I-1. Invoices for Original Contract work shall be presented with the following information:

- Total Work Completed, which means physical completion and acceptance by Honeywell as being correct and proper. Material and/or equipment delivered and not installed does not constitute completion.
- Less 10% Retention
- Net Invoice to Date
- Less Previous Billing (Net)
- Due This Invoice (Original Contract)
- Change Orders to be included in a separate section, with a brief description of each Change Order, and all the above breakdown described above for Original Contract Work
- Grand Total Due for ORIGINAL CONTRACT plus all Construction Change Order work to-date.

1.3.3.2 *Submit two copies of all Invoices to Honeywell's Project Engineer and one copy to the Site Superintendent.*

1.3.3.3 *Submit updated Construction Progress Schedule (See paragraph 1.2.4) with monthly invoice. Any invoice received with out Construction Progress Schedule will be rejected and returned to Contractor.*

1.3.3.4 *Submit Monthly Progress Report (See paragraph*

1.3.3.5 *1.4.1.2) with monthly invoice. Any invoice received with out the Monthly Progress Report will be rejected and returned to Contractor.*

1.3.3.6 Invoices that do not comply with these requirements may result in a delay of payment or return of Invoice to Contractor for resubmission.

1.3.4 Retention

1.3.4.1 Amount of the Total Contract Price (Base Price plus cost of any Construction Change Orders or minus any Credits owed Honeywell) retained by Honeywell until the Work is complete and accepted by Honeywell.

1.3.4.2 Unless otherwise specified, retention shall be ten percent of the Total Contract Price.

1.3.5 Progress Payments

1.3.5.1 Progress payments shall be applicable to projects with a scheduled Work duration of longer than six weeks.

1.3.5.2 Submit monthly invoices to Honeywell, when progress payments are applicable.

1.3.5.3 See Measurement and Payment section, 3.6.

1.3.6 Contract Price Changes

1.3.6.1 See Construction Change Orders (CCO's) section, 1.4.4.3.

1.3.7 Final Payment

1.3.7.1 Submit final invoice to Honeywell after Contract Closeout Meeting is complete.

1.3.7.2 Retention will be released for payment when all Punch List items are complete and any outstanding Warranty claims are resolved and accepted in writing by Honeywell.

1.3.7.3 Retention will also be released for payment upon Honeywell's receipt of the Contractor's Final Release and Waiver of Claims Form included in Section II of the Construction Documents.

1.4 GENERAL ADMINISTRATION

1.4.1 Progress Reporting & Tracking

1.4.1.1 Daily Activity Report

1. *Submit completed Daily Activities Report **(ATTACHMENT 01100-1)** to Site Superintendent by 8:00 a.m. on the next regularly scheduled workday.*
2. Daily Activities Report shall consist of the following:
   - Consecutively number Daily Activities Report
   - Manpower on-site by trade and number of hours worked, including Subcontractors.
   - Equipment on-site by type and number and equipment utilized daily.
   - Documentation of any problems/foreseeable problems.
   - Descriptions of areas worked and work accomplished.
   - Daily totals (of construction progress indicators/metrics).
   - Copy of daily sign-in sheet(s).

3. Daily totals reported will vary depending on type and nature of Work and will be determined by the Site Superintendent at Work initiation. Typical examples are:
   - Cubic yards of insitu material excavated.
   - Number and size of loads of material taken offsite.
   - Weights of materials brought onsite and disposed off-site.
   - Cubic yards of fill in-place.
   - Number and size of loads of material brought onsite.
   - Cubic yards of concrete in-place.
   - Number and size of deliveries of concrete brought onsite.
   - Linear-feet of pipe in-place.
   - Linear feet of conduit in-place.
   - Tie-ins completed.
   - Post-excavation samples collected and locations
   - Analytical results of post-excavation samples
   - Number of Wells complete.
   - Machinery ready for startup.
4. *Submit daily time sheets, referencing specific CCO's or addendum numbers, for any extra work performed on a cost plus or unit cost basis to the Site Superintendent for approval.*
   - These daily time sheets must indicate manpower, equipment, and materials for which the Contractor requests reimbursement.

1.4.1.2 Monthly Status Report

1. *Submit Monthly Status Report with each monthly invoice.*
2. Monthly Status Report shall detail the following:
   Honeywell Project Number
   - Honeywell Project Name
   - Honeywell Subproject Name
   - Site Location
   - Identify changes in staffing or equipment
   - Safety Status
   - Year-to-date incident Report
   - Reference to applicable Agency Document(s)
   - Status and progress of Work (Incremental and Cumulative)
   - Problems or Delays encountered during the reporting period (new schedule and costing forecasts)
   - Change Order status
   - Next month's planned Work activities
   - Compare baseline milestone dates with revised milestone dates or actual completion dates.
   - Explanation of all non-compliance with Contract Documents
   - Tabular summaries of all data collected, during reporting period (quality assurance evaluation, field observations, etc) with supporting documentation.
   - Updated Progress Schedule.
   - Discuss any apparent or potential schedule problems and how to rectify them.

- Provide action plan to mitigate potential schedule problems
- Extra Work anticipated, clearly specify alternates with estimated Lump Sum or unit rate costs and schedule impact for each Extra Work item.

1.4.2 Alternate Approaches & Substitutions

1.4.2.1 All requests for Alternate Approaches and Substitutions (hereafter referred to as Substitutions) shall comply with this section.

1.4.2.2 Request Honeywell's authorization for substitution of any Product, or construction method that is prescribed when a particular product or method is specified as "or equal" before the Work shall be allowed to proceed.

1.4.2.3 Substitutions may require Regulatory Agency review and approval.

1.4.2.4 Requests for Substitution

1. Submit 4 copies of written requests for substitution within 10 workdays of Contract execution.
2. After this period, requests for substitution will only be considered for conditions beyond Contractor control.
3. After the Contract is executed, limit each request to one proposed substitution.
4. For products, include the following in the request:
   - Product identification, including make, model, manufacturer's name and address.
   - Manufacturer's product literature, shop drawings, certified performance / test data, and reference standards.
   - Samples, if appropriate.
5. For construction methods, (when prescribed) include the following in the request:
   - Detailed description of proposed method.
   - Drawings illustrating method.
   - Other data Honeywell may require to establish that proposed method is equal.

1.4.2.5 Honeywell may request the name of references, address and date of installation for similar projects where the proposed Product or construction method was successfully used.

1.4.2.6 Proposed Substitutions will not be accepted if:

1. Substantial revision of Contract Documents will be required as determined by Honeywell.
2. Completion of any Work will be delayed.
3. They are not specifically identified by a formal request for substitution.

1.4.2.7 Honeywell will notify Contractor in writing of decision to accept or reject request for Substitution.

1.4.2.8 If Honeywell determines that a proposed substitute is not equal to that specified, Contractor shall furnish the Product, manufacturer, or method originally specified.

1.4.3 Change Management

1.4.3.1 Changes to the original scope of work can be made by:

1. Bulletins issued in numerical order prior to award.
2. Addenda issued in numerical order after award.
3. Construction Change Orders (CCO).

1.4.3.2 Work beyond the original scope of the contract shall not proceed without written authorization by Honeywell.

1.4.3.3 Construction Change Orders

1. Construction Change Orders (CCO) [formerly Extra Work Orders (EWO)] shall be administered in accordance with the Construction Change Order Procedure (**ATTACHMENT 01100-2**).

1.4.4 Acceptance Of Work

1.4.4.1 Honeywell must accept all Work in writing.

1.4.4.2 All accepted areas shall be complete and ready for start-up operations.

1.5 COMMUNICATION

1.5.1 Electronic Data / Documentation Requirements

1.5.1.1 The following data / document types shall be compatible with the listed electronic file formats and versions listed (earlier versions and formats will be accepted):

1. Calendar: Microsoft Outlook 98
2. Databases: Microsoft Access 97
3. Drawings, Construction: AutoCAD 14
4. e-mail: Microsoft Outlook 98
5. Graphics, Miscellaneous: Visio Standard 5.0.
6. Photographs, Digital: "*.jpg" file format
7. Presentations: Microsoft PowerPoint 97
8. Schedules: Microsoft Project 98
9. Spreadsheets: Microsoft Excel 97
10. Text Documents: Microsoft Word 97

1.5.2 Photographs & Video Recordings

1.5.2.1 Copies of all photographs or video recordings documenting Work progress shall be furnished to Honeywell.

1.5.2.2 Photographs or video recordings are only permitted at inactive (no longer in operation) Honeywell sites with verbal approval from the Honeywell Project Manager.

1.5.2.3 Photographs or video recordings are only permitted at active (in operating mode) Honeywell sites with written approval from the Honeywell Site Management Representative.

1.5.2.4 Electronic photographs shall be submitted as *.jpg files. Videos shall be submitted in VHS format.

1.5.3 Contractor Submittals

Submittals that are to be included as part of the Contractor's Scope of work are summarized in the Submittal Schedule included as **ATTACHMENT 01010-2**.

1.5.3.1 Contractor Submittal Requirements

1. A transmittal letter must accompany all submittals.
2. The transmittal letter shall indicate:
   - Purpose of submittal
   - Type of submittal (Approval, Comment, Record, Certified, As-Built, etc.)
   - Desired return date of submittal
   - Name and telephone number of the person to whom any questions can be directed.
3. Honeywell review time will vary depending on scope.
4. Allow a minimum of five workdays for Honeywell review of any submittal.
5. Contractor submittals, as required in the Contract Documents shall consist of the following:

- Drawings (Shop Drawings, Progress Drawings, As-Built Drawings, etc.)
- Specifications (for Products furnished, Concrete Design Mix, etc.)
- Technical Data (Manufacturer Cut Sheets and Performance Information)
- Calculations
- Procedures (Rigging, Lifting, Welding, Construction Methods, etc.)

1.5.3.2 Shop Drawings

1. Shop Drawings for Contractor supplied machinery or fabricated components shall include the following, as may be applicable:
   - All dimensions and other information necessary for lifting, rigging, handling, storage, arrangement, clearances, installation, anchoring and assembly;
   - Tie-ins, hook-ups, utility requirements
   - Provide schedule of shop drawings.
2. *Submit three sets of Approval Shop Drawings to Honeywell prior to fabrication.*
3. Honeywell or Engineer will review, comment or authorize fabrication within ten workdays of receipt of Approval Drawings.
4. *Submit at least three sets of manufacturer's Certified Shop Drawings prior to installation.*

1.5.3.3 Construction Progress Drawings

1. Construction Progress Drawing markups shall include:
   - All dimensions and other relevant information, which document the construction work performed and how the progress relates to the original contract documents.
   - Relevant information shall include, but not be limited to:
   - Scope changes, previously undocumented underground and above-ground conditions, location, arrangement, orientation, elevation, distance, size, area, volume, etc.
2. A set of unmarked Contract Drawings will be provided to the Contractor if requested.
3. The drawings shall be continually marked-up to document field changes as the Work progresses.

1.5.3.4 As-Built Drawings

1. As-Built Drawings shall be a clearly marked-up set of contract drawings and shall illustrate:
   - Construction Progress Drawing information.
   - All field changes, additions, deletions, substitutions, or corrections.
   - All CCO Work must be shown on the as-built drawings.
2. Include supplemental Contractor As-Built sketches as required.
3. *Submit As-built drawings and records within 10 workdays of completion of the Work. As-built drawings must be prepared to include the standard Honeywell format for DATA MANAGEMENT protocols, and be in accordance with the requirements contained in the Scope of Work.*

1.5.4 Correspondence

1.5.4.1 Correspondence Requirements

1. Submit three copies of all correspondence to Honeywell.

1.5.4.2 Prior to Contract Award

1. *Submit all formal correspondence prior to Contract award to Honeywell's Purchasing Representative (Manager).*

2. All correspondence shall include the Honeywell RFP number, project name and number, and related subject as applicable.
3. All questions concerning commercial documents shall be directed to Honeywell's Purchasing Representative (Manager) .
4. All technical questions shall be directed to the Honeywell's Project Engineer.

1.5.4.3 After Contract Award

1. *Submit all formal correspondence and questions after Contract award to Honeywell's Site Superintendent.*
2. All correspondence shall include Honeywell's purchase order number, project name and number, job site location, and related subject, as applicable.

1.5.5 Meetings

1.5.5.1 Meeting Requirements

1. The following is a list of anticipated Meetings for this project:
   - Pre-Bid Meeting
   - Kickoff Meeting
   - Project Planning, Progress Meetings, and Schedules
   - Safety Meetings
   - Contract Closeout Meetings
2. The following is a list of possible Meetings for this project, depending on Project requirements:
   - Pre-Installation Meeting
   - Problem or Work Deficiency Meeting
3. The Site Superintendent or the Construction Manager, at their discretion, will hold meetings, not otherwise specified as the need arises, during the contract.

1.5.5.2 Meeting Agenda

1. The meeting organizer shall prepare and distribute a meeting agenda at least 1 workday prior to meeting, to all invited attendees.
2. The Agenda shall incorporate the following minimum requirements:
   - Safety: Relevant safety issues for Work planned or in progress. Any staff changes since the previous meeting.
   - Purpose: What the meeting is trying to accomplish.
   - Agenda: The steps to achieve the purpose. Include action items from last meeting, next steps, and agenda for next meeting.
   - Code of Conduct: Treat others with respect, build on other's ideas, make decisions and resolve conflict.
   - Expectations: Determine if Agenda meets the group's expectations. Modify agenda as necessary.
   - Roles: Assign roles to keep meeting on track and on schedule. (Leader, Moderator Time Keeper, Scribe.)

1.5.5.3 Meeting Attendance

1. The following groups or individuals shall be represented at meetings by persons familiar with the project and authorized to conclude matters relating to the project, as may be required:
   - Honeywell Site Supervisor
   - Contractor

- Each major subcontractor
- Supplier(s)
- Agency Representative(s)
- Others having relevant business with the Project Work.

1.5.5.4 Meeting Minutes

1. Meeting Organizer shall ensure that meeting minutes are prepared, and distribute copies within 5 working days after meeting to all participants, and those affected by decisions made.
2. Regardless of participation furnish all meeting minutes to Project Manager, Project Engineer and Site Superintendent.
3. Meeting minutes will include a Meeting location, date, time, attendees, brief narrative summary of progress since previous meeting, list of action items with responsible parties named and due dates, and a summary of other relevant issues.

1.5.6 Work Plans

1.5.6.1 Work Plan (WP)

1. Work Plan must be agreed to prior to initiating site work.
2. *Submit Work Plan to Honeywell, within ten workdays of contract award.*
3. Honeywell will review and provide written comments for Work Plan within five days from receipt.
4. *Submit revised Work Plan, within five workdays of receipt of Honeywell's written comments.*
5. Work Plan tasks shall correlate with <u>Scope of Work</u> and Contractor's Bid tasks.
6. Work Plan , shall include at a minimum the following:
   - Full detail for all phases of Contractor's Work.
   - Project Directory
   - Organization chart with the names and authority levels:
   - Honeywell's (Project Manager, Project Engineer, Site Superintendent, etc.)
   - Contractor's (Construction Project Manager, Construction Manager, Site Health & Safety Officer, QA/QC Engineer, etc.)
   - Subcontractor's Representative(s)
   - Contingency Plan
   - Quality Assurance / Quality Control Plan
   - Heath and Safety Plan

1.5.6.2 Contingency Plan (CP)

1. Contingency plan shall include:
   - Detailed procedures for dealing with:
   - Emergency or spill when loading, transferring or transporting of hazardous or TSCA waste, fuel, oil and lubricants, (if applicable)
   - Excavated or detected subsurface waste containers or gas cylinders. (if applicable)

1.5.6.3 Quality Assurance / Quality Control Plan (QAP)

1. Quality Assurance/Quality Control Plan (QAP):
   - All required sample collection, inspection and test requirements and methods
   - Projects not requiring a project specific QAP will have all inspections listed as part of the respective Technical Specifications.

1.5.6.4 Health & Safety Plan (HASP)

1. Prepare and comply with Health & Safety Plan as per Specification 01620.

1.5.7 Installation, Operation and Maintenance Manual

1.5.7.1 Installation Operation and Maintenance Manual Requirements

1. Installation, Operations and Maintenance (IOM) Manual shall include the following:
2. Binder(s) having durable vinyl covers, three-hole, D-ring, 3" thick maximum x 8-1/2" wide x 11" inch tall format.
3. Binder cover shall indicate title "INSTALLATION, OPERATION AND MAINTENANCE MANUAL", machinery, process or system description, project name, project number, project location, date prepared.
4. Furnish Table of Contents for each volume, with each Product or system description identified, typed on white paper, in parts as follows:
5. Subdivide binder contents with permanent dividers, logically organized as described below; with tab titles clearly printed under reinforced laminated plastic tabs.
6. Part 1: Directory, listing names, addresses, and telephone numbers of Honeywell Site Superintendent, Contractor, Subcontractors, and major equipment suppliers.
7. Part 2: Installation
   - Tolerances, alignment, calibration, set points, capacity, size, outputs;
   - Tie-ins, hook-ups, utility requirements;
   - Testing, inspection, startup, commissioning;
8. Part 3: Operation
   - Itemized Product List.
   - Process system description and function with significant design criteria.
   - Operating instructions.
9. Part 4: Maintenance instructions, arranged by main System or Product and subdivided accordingly by subassemblies and individual Products, and shall include:
   - All Products are categorized and labeled corresponding to the tag numbers illustrated on the P&I D's or other relevant drawings.
   - Names, addresses, and telephone numbers of Subcontractors and suppliers for each assembly, subassemblies or Products.
   - Parts list for each component.
   - Maintenance instructions for Machinery and Systems.
   - Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   - Troubleshooting, spare parts, special tools & fixtures, lubrication & maintenance instructions & frequency, etc.
10. Part 5: Project documents and certificates, including the following:
    - Shop drawings and product datasheets
    - Air and water balance reports.
    - Final OSHA man-hours
    - Certificates
    - Warranties
    - As-Built Drawings
    - Other relevant data

1.5.7.2 *Submit Installation and Draft Operations and Maintenance (IOM) Manual for all Contractor supplied Machinery and Systems no later than 20 work-days after approval of shop drawings. The Draft IOM shall also be submitted in electronic format.*

1.5.7.3 *Submit one copy of complete IOM to Honeywell twenty workdays prior to final inspection. The complete IOM shall also be submitted in electronic format.*

1.5.7.4 Honeywell's Site Superintendent will review, comment and return IOM within five workdays.

1.5.7.5 Revise content of all document sets as required prior to final submission. A final copy should be submitted in advance of operator training to allow operations personnel to review.

1.5.7.6 *Submit three complete bound sets of final "As-Built" IOM to Honeywell within ten workdays after final inspection.*

1.6 MATERIALS MANAGEMENT

1.6.1 Procurement

1.6.1.1 Contractor supplied materials shall be ordered after Contract award or as authorized by Honeywell in writing.

1.6.1.2 *Submit copies of Purchase Orders (PO) [less pricing] within fifteen workdays after Contract award to Site Superintendent for critical path items and major Products when such items are critical to the successful on-time completion of the Work. Purchase Orders shall show promised delivery dates*

1.6.1.3 Immediately indicate long delivery items that will adversely affect Project Schedule.

1.6.1.4 Furnish all materials; other than those specifically indicated as supplied by Honeywell in the Contract Documents.

1.6.2 Warranties

1.6.2.1 Execute and assemble transferable warranty documents from Subcontractors, Suppliers, and Manufacturers.

1.6.2.2 Insert duplicate notarized copies of all Warranties into IOM Manual.

1.6.2.3 For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 workdays after acceptance, listing date of acceptance as start of warranty period.

1.6.3 Compliance with Regulations

1.6.3.1 Obtain required certifications, permits and inspections and comply with all Federal, State, Local, and DOT regulations governing transportation, handling, storage and use of Products.

1.6.3.2 Submit Material Safety Data Sheets (MSDS) to Site Superintendent for all Products having MSDS's 10 workdays prior to delivery of such Product to the site.

1.6.3.3 MSDS(s) must be maintained and readily available at all times for onsite use.

1.6.4 Transportation and Handling.

1.6.4.1 Transport and handle Products in accordance with Federal, State and Local regulations, MSDS, manufacturer's instructions and Honeywell requirements.

1.6.5 Receiving

1.6.5.1 Receive and off-load all Products supplied by Honeywell.

1.6.5.2 Submit off-loading procedure(s) at least ten workdays prior to lift for Honeywell's review.

1.6.5.3 The Site Superintendent must authorize Contractor's off-loading procedures for all major Products supplied by Honeywell.

1.6.5.4 Upon receipt of Honeywell or Contractor supplied Products, **<u>IMMEDIATELY</u>** inspect for damage, confirm quantities and verify for compliance with specifications.

1.6.5.5 Notify Site Superintendent and Transporter immediately, in writing, any shortages, damage, or irregularities in shipment.

1.6.5.6 Photograph Product damage, or irregularities from shipment.

*1.6.5.7 Submit copy of completed Receiving and Inspection Report (**ATTACHMENT 01100-3**) to Honeywell.*

1.6.5.8 Maintain copies of all report forms at the Project site.

1.6.5.9 Provide equipment and personnel to unload and handle Products

1.6.5.10 Prevent damage and defacement of Products.

1.7 QUALITY

1.7.1 References and Standards

1.7.1.1 All Products and Workmanship be in accordance with the latest versions and amendments of all applicable codes and standards specified in the Contract Documents, that are in current use by the authorities having jurisdiction, as well as any applicable federal, state, and local codes, ordinances, and regulations.

1.7.1.2 For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

1.7.1.3 Where various specified requirements conflict, the more stringent quality standards or more precise workmanship requirements shall govern.

1.7.1.4 Should manufacturers' instructions conflict with Contract Documents, request clarification from Honeywell before proceeding.

1.7.2 Products

1.7.2.1 .Use only new and unused Products in good condition and as specified in the Contract Documents for the execution of the Work.

1.7.2.2 Materials or Products removed from existing premises shall only be reused as specifically permitted by the Contract Documents.

1.7.2.3 Use only Products specified when a specific product name, manufacturer, supplier, model, or catalog number is identified in the Contract Documents or when Specifications state that no substitution are permitted.

1.7.2.4 Select Product that is compatible with other similar products already installed or where multiple Product options are specified.

1.7.2.5 To the maximum extent practicable, provide Products of the same kind and from a single source.

1.7.2.6 Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

1.7.2.7 Maintain test certificates for soils, crushed rock or gravel, from offsite sources, showing composition and material is contaminant-free on site, accessible for use at all times.

1.7.2.8 Submit copies of test certificates for soils, crushed rock or gravel, from offsite sources, showing composition and material is contaminant-free to the Site Superintendent daily

1.7.3 Workmanship

1.7.3.1 Product and workmanship quality shall comply with applicable industry standards or Manufacturer Recommendations and these Contract Documents as a minimum.

1.7.3.2 Work is to be performed by persons qualified, through training and experience, to produce required or specified quality.

1.7.4 Preparation

1.7.4.1 Verify that existing site conditions and substrate are capable of structural support or attachment of new Work being applied or attached or otherwise acceptable for subsequent Work.

1.7.4.2 Verify any conditions specifically described in the specifications.

1.7.4.3 Verify that utility services and tie-ins are available, of the correct characteristics, and in the correct locations.

1.7.4.4 Verify that field measurements are as indicated on construction drawings, shop drawings or as instructed by the manufacturer.

1.7.4.5 Clean and prepare anchorage or mating surfaces as required.

1.7.4.6 Beginning new Work in an area, indicates acceptance of existing conditions of that area by Contractor.

1.7.5 Installation

1.7.5.1 Comply with manufacturers' instructions; adhere to each step in sequence.

1.7.5.2 Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Honeywell before proceeding.

1.7.5.3 Adjust Products to appropriate dimensions, tolerance, position, orientation and alignment before securing Products in place.

1.7.5.4 Immediately report any deviation from manufacturers' written instructions to Honeywell.

1.7.6 Inspection, Testing and Sampling

1.7.6.1 All material and workmanship is subject to Honeywell's inspection and acceptance at any location where fabrication, installation, or erection is performed.

1.7.6.2 Coordinate with Honeywell required project inspections, testing and sampling including, but not limited to, Machinery, construction, operations, permits, work conditions, health, safety environment, work in progress, completed work, etc. throughout the duration of the project.

1.7.6.3 Fully assist the Site Superintendent with tools, scaffolding, labor, etc., as may be required for inspections.

1.7.6.4 Permit access to Honeywell or its' designee and Officials having Jurisdiction for inspection, testing and sampling

1.7.6.5 Notify Site Superintendent at least two workdays before performing any scheduled tests or inspections.

1.7.6.6 All tests and inspections required by the Contract Documents shall be made by a technician qualified by training and experience or testing laboratory and shall be carried out in the presence of the Site Superintendent.

1.7.6.7 Reports shall document test results, inspection observations, indicate compliance status and shall identify for which Specification the tests or inspection was performed.

1.7.6.8 The Contractor and Site Superintendent must cosign all test reports.

1.7.6.9 Measuring, inspection, and testing equipment

1. Measuring, inspection, and testing equipment will be calibrated as required by the specifications and, when applicable, industry standards or the authorities having jurisdiction.
2. Where no calibration standards exist, the basis used for calibration shall be noted.
3. A documented procedure is required for all equipment that is to be calibrated.
4. All calibrated equipment shall be in good condition and shall be labeled or tagged indicating the current status and identifying who performed the calibration and the date.
5. Provide copy of calibration certificate when required by the specifications or requested by Site Superintendent.
6. Any environmental limitations shall be noted and strictly followed.
7. Unauthorized adjustment of calibrated equipment is not permitted.
8. Immediately notify Site Superintendent when testing equipment used on the project is out of calibration.

1.7.6.10 When specified in the Contract Documents, Honeywell will appoint, employ, and pay for specified services of an independent inspection or sampling firm.

1. The independent firm will perform inspections and other services specified in the specifications and as required by Honeywell.
2. Inspecting may occur on or off the project site as required by Honeywell.
3. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access and assistance by incidental labor as requested.
4. Notify Honeywell ten workdays in advance for Work requiring independent inspection or sampling services.

1.7.7 Analytical Services

1.7.7.1 Honeywell shall arrange for analytical laboratory services, except when required for Contractor's use. Contractor shall attempt to utilize Honeywell approved laboratories when providing analytical services.

1.7.7.2 Coordinate any analytical services required for the remediation and Contractor's operations including:

1. Scheduling, bottle delivery, sample collection, labeling, documentation, sample shipment, data evaluation and data summary.

1.7.7.3 Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

1.7.7.4 The same independent firm shall perform re-testing due to Contractor controlled non-conformance issues as directed by Honeywell. Contractor will be responsible for the re-testing costs.

1.7.8 Nonconforming Conditions

1.7.8.1 Nonconforming conditions are those that cannot be resolved within the scope of existing specifications and will also include design errors.

1.7.8.2 Report all nonconforming conditions to the Site Superintendent in writing unless otherwise instructed in writing by Honeywell.

1.7.8.3 Where possible, the affected item or area will be segregated, labeled or otherwise marked denoting nonconforming condition.

1.7.8.4 No further work may continue on the affected item or area without written consent from Honeywell.

1.8 RISK MANAGEMENT

1.8.1 Environmental

1.8.1.1 Continually monitor Work area for appearance, discoloration, odors, use field screening instruments as needed to determine presence of contamination.

1.8.1.2 Minimize air emissions including fugitive dusts, volatile organic compounds, smoke, and odors.

1.8.1.3 Minimize wind and water erosion, contact with storm water, and spillage when handling all soils, sediments, debris, and construction materials.

1.8.1.4 Store contaminated equipment and materials in designated lay-down or holding areas only.

1.8.2 Health & Safety

1.8.2.1 All Contractors and Subcontractors shall meet the following Safety Metrics:

1. Experience Modification Rate (EMR) at or below **1.00**,
2. OSHA Total Case Incident Rate (TCIR) at or below **6.0**,
3. Lost Workday Case Incident Rate (LWCIR) at or below **4.0.**

1.8.2.2 Submit to Honeywell, written verification of all Subcontractor compliance with Honeywell Safety Metrics prior to the Subcontractor performing any work.

1.8.2.3 For unusual circumstances, the Contractor may petition Honeywell for a Safety Metrics waiver. Approval of this waiver will be solely at Honeywell's discretion.

1.8.2.4 Prepare, and comply with, a site-specific Health and Safety Plan (HASP) in accordance with Specification 01620: Health, Safety and Emergency Response.

1.8.2.5 Become familiar and comply with Honeywell's applicable project and site-specific Health, Safety, Fire Protection and Emergency Response requirements.

1.8.2.6 Provide a fire watch, and necessary safety equipment (welding screen/blankets, agreed to fire extinguishers, fire hoses, firewater etc.) while performing any HOT WORK.

1.8.2.7 Provide necessary barricades, covers, guards and other protective measures to keep all personnel that can enter the affected areas during the course of their normal activities, safe from all construction hazards.

1.8.2.8 Honeywell reserves the right to restrict Contractor's use of Products that represent an unreasonable risk to workers or the public based upon MSDS, Manufacturer information or Governmental Guidelines.

1.8.3 Permits & Other Permissions

1.8.3.1 Permits obtained by Honeywell are listed in **ATTACHMENT 01010-1** in the Summary of Work.

1.8.3.2 Obtain all construction licenses, plan reviews, and permits in connection with the work unless otherwise stated in the Scope of Work Document.

1.8.3.3 Contractor shall immediately notify Honeywell in writing of violation of any ordinance, law, or code.

1.8.3.4 Honeywell shall review permit applications prepared by Contractor prior to submitting application to authorities having jurisdiction for approval.

1.8.3.5 Copies of all approved permits shall be given to Site Superintendent.

1.8.4 Building Code Compliance

1.8.4.1 Apply for and procure all necessary Building Code and other locally required permits, permissions and approvals necessary to perform the work, from the appropriate authorities having jurisdiction.

1.8.4.2 Honeywell will provide Engineering Drawings as Specified in the Contract Documents that may be necessary to obtain Building permits

1.8.4.3 Administer all Code required inspections, throughout all phases of Construction, including Certificate of Occupancy, as may be required.

1.8.4.4 Submit to Honeywell's Site Superintendent copies of all Inspection Reports, including final acceptance inspection forms by Local, State, Federal or other governmental authorities.

2 BIDDING & CONTRACT AWARD

2.1 BIDDING

2.1.1 Refer to Section I - BIDDER INFORMATION of this Request for Próposal for bidding information.

2.2 PRE-BID MEETING

2.2.1 Honeywell will schedule a pre-bid meeting, prior to the Proposal due date, to be conducted at the project site at the time and date specified in the Request for Proposal.

2.3 SITE INSPECTION

2.3.1 Prior to Contractor's Bid Proposal submittal, Contractor shall visit the site.

2.3.2 As part of the pre-bid meeting, a site visit will occur to allow the Contractor to examine and evaluate existing site conditions, topography, available utilities, foundations, surface water and drainage conditions.

2.3.3 Any follow-up visits shall be coordinated with Honeywell's Project Engineer.

2.3.4 Unless otherwise specified, a Honeywell Representative must be present during all site visits.

3 SITE MANAGEMENT

3.1 SITE ACCESS & SECURITY

3.1.1 Only personnel in the employ of Honeywell or its Contractors, Subcontractors or Suppliers shall be allowed onsite. No other personnel are allowed onsite without the express written approval of Honeywell.

3.1.2 Only vehicles authorized by the Site Superintendent shall be allowed onsite. All others must remain in designated areas, parking areas, or offsite.

3.1.3 The Contractor's employees shall access the site via agreed to point of entry.

3.1.4 Maintain a sign-in / sign-out log(s) for the duration of the site activities.

3.1.5 All personnel must sign-in upon site entry and sign-out upon site exit.

3.1.6 For projects requiring badges – all personnel must wear ID badges in a visible and conspicuous location at all times while on site (not viable with Tyvek).

3.1.7 Administer the distribution and return of Worker and visitor ID badges.

3.1.8 Replace lost or stolen ID badges within 24 hours of loss.

3.1.9 Provide site security for Contractor Work, equipment, and Products, and any Products supplied by Honeywell to Contractor, until final acceptance by Honeywell

3.2 EXECUTION, COORDINATION OF WORK AND ROLES AND RESPONSIBILITIES

3.2.1 Contractor

3.2.1.1 Contractor Shall:

1. Provide personal attention to the execution of this Contract and assure there is fulltime supervision throughout the entire contract duration.
2. Assure that Contractor's Project Manager, Construction Manager, Health and Safety Officer, workers and all Subcontractors fully comply with all of the Construction Document requirements.
3. Direct the Work of Contractor's workers and Subcontractors.
4. Address worker or Subcontractor questions regarding the Work.
5. Utilize recognized engineering and survey practices to:
   - Establish elevations, lines, levels and utility locations, slopes, and invert elevations.
   - Locate and lay out construction features including necessary stakes for cut, fill, placement, and grading operations;
   - Verify set-backs and easements;
6. Confirm drawing dimensions and elevations;
7. Verify locations and elevations of existing utilities at point of connection with new services well in advance of new construction;
8. Notify Honeywell of potential conflicts between new or existing utilities or construction before installing the particular item of work.
9. Employ responsible and competent Construction Manager qualified by experience and training to capably supervise all phases of the work. This experience must include:
   - Commitment to safety procedures and their enforcement.
   - Job planning, forecasting, and scheduling.

- Utilization of effective manpower, equipment, and material control techniques.
- Construction change estimating ability and execution authority.
- Ability to manage and interface with all Subcontractors.
- Administrative organization and execution of all contract requirements.

10. *Submit resume (including work experience and safety record) of the proposed Construction Manager with Contractor's Bid Proposal.*
11. Authorization by Honeywell shall be required prior to the assignment, transfer, or dismissal of the Construction Manager.
12. When in the opinion of Site Superintendent the Construction Manager is insufficiently qualified or fails to meet the Contract requirements, the Contractor shall immediately remedy the situation to Honeywell's satisfaction.
13. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
14. Conduct all work, in accordance with Contractor's Work Plan, Contractor's Health and Safety Plan (HASP) and all applicable federal, state, local laws statutes, or codes and Honeywell policies.
15. Provide written verification that equipment is properly installed.
16. Provide written documentation of testing.
17. Meet with the Honeywell Site Superintendent prior to construction start.
18. Accommodate special site safety requirements.
19. Coordinate, conduct and document any on-site and off-site project meetings as specified herein.
20. Provide information regarding all project Work aspects, schedules, and submittals for Honeywell review and comment.
21. Incorporate or otherwise respond to Honeywell submittal comments or reported deficiency observations.
22. Coordinate Work of various crafts having interdependent responsibilities for installing, connecting to, and placing Systems into service.
23. Coordinate space requirements, supports, and installation of mechanical and electrical Work, which are either indicated on Drawings are called for in the Specifications.
24. Provide written documentation of operations and maintenance training.
25. Coordinate locations of fixtures and outlets with finish elements.
26. Coordinate completion and clean up of Work areas, as the Work progresses, in preparation for Substantial Completion or as may be designated for Honeywell's occupancy.

3.2.1.2 Equipment, Tools and Supplies

1. Provide all equipment, tools and supplies necessary to perform the required work described by these specifications or as indicated on the contract documents.
2. All tools and equipment must be maintained in a safe condition.
3. All equipment, tools and supplies shall be of sufficient quantity to assure the successful completion of the work in accordance with the contract schedule.

3.2.1.3 Contractor On-Site Resources

1. The Contractor shall:
   - Mobilize equipment, materials, labor and any other resources, of appropriate capability and size, and only as necessary, to productively perform the Work items for which these resources are required.

- Demobilize equipment, materials, labor and other resources immediately after the Work items for which these resources are required are complete or when the Work can not be productively performed.
- Provide equipment that is appropriately sized and suitable for the intended Work. Equipment shall be neither oversized (beyond recommended factor of safety) nor undersized (below recommended factor of safety). Equipment shall only be used for its' intended use. Equipment shall be operated, inspected and maintained in accordance with applicable OSHA, manufacturer and industrial standards.

2. In instances where Honeywell may be responsible to cover the costs for Contractor's on-site resources, such as during periods of down time created or directed by Honeywell, the Contractor will be required to mitigate the costs for these resource to the maximum extent possible. Contractor and Honeywell shall evaluate potential alternatives such as demobilizing equipment, suspending labor resources, etc. Failure to meet these obligations, depending on the severity, may result in Honeywell's reduction in or suspension of Contractor's Scope of Work, or termination of the Contract.

3.2.2 Honeywell

3.2.2.1 Honeywell Site Superintendent will:

1. Honeywell's Site Superintendent shall address Contractor questions regarding the Work.
2. Honeywell will not direct the Work of Contractor's workers or Subcontractors.
3. Honeywell will only address issues regarding the Work with Contractor's designated representative(s).
4. The Site Superintendent has the authority to stop work whenever such stoppage may be necessary to ensure the proper and safe execution of the work.
5. Define any special work and specific site safety requirements (for operating facility).
6. Make periodic inspections of work in progress.
7. Participate in all on-site and off-site project coordination meetings.
8. Review and comment on all project Work aspects, schedules, and submittals, and will inform Contractor of any observed deficiencies to ensure compliance with Contract Documents.
9. Act as liaison among Honeywell, Contractor, EPA, and Operating Facility personnel.

3.2.3 Subcontractors

3.2.3.1 All Subcontractors shall submit a completed Contractor Safety Evaluation Package **(SECTION I - ATTACHMENT I-2)** to Contractor.

3.2.3.2 Contractor shall compile and submit to Honeywell all Subcontractor Contractor Safety Evaluation Packages prior to commencing site Work.

3.2.3.3 Contractor Safety Evaluation Packages for all major subcontractors shall be submitted to Honeywell along with the Bid proposal.

3.2.3.4 Additional or new Subcontractors (major or minor) must complete the Contractor Safety Evaluation Package and be agreed to by Honeywell prior to their initiating site Work.

3.3 CONSTRUCTION MEETINGS

3.3.1 Project Planning and Progress Meetings

3.3.1.1 Construction Manager shall hold regularly scheduled onsite Project Planning and Progress Meetings with all subcontractors and Honeywell.

3.3.1.2 Planning meeting shall be held monthly, unless otherwise agreed to by Honeywell's Site Superintendent.

3.3.1.3 Contractor will notify Honeywell of meeting location, date and time.

3.3.2 Safety Meetings

3.3.2.1 Conduct Daily and Weekly Safety meetings in accordance with the requirements of Specification 01620.

3.3.3 Pre-installation Meeting

3.3.3.1 Construction Manager will hold a pre-installation meeting at the site prior to commencing work when required in the Specifications.

3.3.3.2 Notify Honeywell's Site Superintendent at least 4 workdays in advance of the proposed meeting date.

3.3.3.3 Prepare agenda and preside at meeting:

3.3.3.4 Review conditions of installation, preparation and installation procedures.

3.3.3.5 Review coordination requirements for other Work or for ongoing facilities operations.

3.3.4 Problem or Work Deficiency Meeting

3.3.4.1 Either Contractor or Honeywell shall initiate a meeting when and if a problem or deficiency is present or likely to occur.

3.3.4.2 The meeting shall define and resolve the problem or work deficiency.

3.4 UTILITY HAZARDS

3.4.1 Before starting work in any area, locate and identify any active or inactive underground or overhead utilities that could present a hazard.

3.5 OPERATING FACILITIES, WORKING IN

3.5.1 Compliance with Operating Facility Rules and Practices

3.5.1.1 Coordinate with Operating Facility to locate on-site underground utilities before attempting Excavation Work. An Excavation Permit may be required before any excavation can be performed.

3.5.1.2 Do not operate any existing Facility valves, gates, switches, instrumentation, controls, other items of equipment, or utilities required for execution of Contractor's Work without Facility Operation's expressed written permission.

3.5.1.3 Contractor shall strictly comply with all Facility Operation's Work Permitting, Lockout and Tag-out procedures, Decommissioning and Commissioning procedures.

3.5.1.4 All Work shall be complete, tested and ready for Commissioning prior to "Transfer of Care, Custody and Control" to Honeywell.

3.5.1.5 Obtain a properly executed Work Permit (General, Hazardous or Hot Work) as required.

3.5.2 Connection to Existing Facilities

3.5.2.1 All Work shall be tested, calibrated, inspected and in working condition before final tie-ins are made to an existing Facility.

3.5.2.2 Prior to making any tie-ins or hot taps to existing electric, water, sewer, air, steam or process piping systems, contractor must receive Facility approval and obtain all applicable Work Permits

3.5.3 Coordination with Facility Operations

3.5.3.1 Keep existing Facility in operation unless otherwise permitted in Contract Documents or as agreed to in advance in writing by Honeywell.

3.5.3.2 Avoid interference with operations of Facility and Work of Others.

3.5.3.3 Schedule and execute operations so as to avoid interference with the operations of the existing facilities and Work of others.

1. Submit to Honeywell and Facility Operations, written notice and itemized Work schedule at least 10 workdays before commencement of Work that may affect the operations of the Facility, such as shutdowns, tie-ins, process bypass loops, and modification to existing electrical, control, safety or security systems.

3.5.3.4 Unscheduled interruptions resulting from remedial work under the Contractor's responsibility must be returned at once to normalcy through temporary or permanent means.

1. Temporary corrections shall be made permanent at the next scheduled interruption to operations, or sooner as may be practicable.
2. All permanent corrections must meet applicable Specification requirements.
3. Interruption of service to Operating facilities exceeding eight hours in any 24-hour period, is not allowed unless specifically accepted in writing by Facility Operations management.

3.6 MEASUREMENT & PAYMENT

3.6.1 Measurement & Payment Requirements

3.6.1.1 Tolerance shall be +/- 0.01 foot for field measurements, unless otherwise specified.

3.6.1.2 When using surveys for measurement and payment:

1. Construction Manager shall sign Surveyor's field notes.
2. GPS the site locations
3. Keep duplicate field notes on file and provide copy to Site Superintendent
4. Certify digitally calculated quantities for payment purposes.

3.6.1.3 Reconciliation of any additional as-built quantities shall be done in accordance with Honeywell's Construction Change Order procedure.

3.6.2 Lump Sum / Unit Rate Bid Items

3.6.2.1 Each lump sum tasks will be paid at 100% of the proposal bid price, on a per task basis, when the actual work performed is within plus or minus 5% of the estimated bid quantity.

3.6.2.2 Any actual quantities in excess of 105% of the estimated bid quantities that may result in an extra cost to Honeywell will require the Contractor to request a Construction Change Order before performing such extra work.

3.6.2.3 Any actual quantities below 95% of the estimated bid quantities shall result in an automatic credit to Honeywell.

3.6.2.4 The Contractors bid proposal unit rates shall be equally applied to extra costs (above 105%) or credits (below 95%) to determine the actual cost or credit of the task.

3.6.3 Lump Sum Basis

3.6.3.1 Lump sum items with no unit rate specified shall be measured as a single item. Unless otherwise specified, lump sum items will be paid when the work is 100% complete and ready for it's intended use or the next phase of construction.

3.6.3.2 Lump sum items with unit rate specified shall be measured on a unit rate basis as per the Contractors proposal. Payments will be made in accordance with the progress payment provisions specified.

3.6.4 Length Basis

3.6.4.1 Length basis items shall be measured along the item's centerline in accordance with the Contract Documents. Payments will be made in accordance with the progress payment provisions specified.

3.6.5 Area Basis

3.6.5.1 Area basis items shall be measured to a sufficient accuracy to calculate the actual surface area within limits specified in the Contract Documents. Payments will be made in accordance with the progress payment provisions specified.

3.6.5.2 For areas of a regular geometric nature, the minimum measurements required to perform such calculations are acceptable.

3.6.5.3 For areas of complex configuration, area shall be calculated using appropriate surveying or similar techniques.

3.6.5.4 Calculate areas to +/- 1/10 sq. ft. or +/- 1/100 sq. yd as may be appropriate.

3.6.6 Volume Basis

3.6.6.1 Volume basis items shall be measured to a sufficient accuracy to calculate the actual volume within limits specified in the Contract Documents and as further defined below. Payments will be made in accordance with the progress payment provisions specified.

3.6.6.2 Excavation & Backfill

1. For excavation of impacted material (soil, etc.):
   - After clearing and grubbing and before commencing excavation, survey ground surface elevations and establish ground surface area as excavation datum for excavation volume calculation.
   - As the work progresses and as may be required to determine bottom area and full depth of excavation, **survey** bottom of excavation surface elevations and area to determine excavation terminus.
   - Excavation beyond the specified boundary limits, including but not limited to, materials excavated for slope stability, safety or other construction facilitation are considered over excavation and shall be excluded from the volume calculations for excavation payment purposes.
2. For backfill using onsite fill material:
   - Use Excavation survey information if available.
   - If excavation survey information is not available, survey bottom of excavation surface elevations and area to determine excavation datum for backfill volume calculation.
   - After onsite backfill material is placed and compacted, survey ground surface elevations and establish top of backfill surface area as backfill terminus.
   - If onsite fill material (or topsoil, as the case may be) is brought to finished grade, use final grade measurements as backfill terminus.
3. For backfill using imported fill material or topsoil:
   - Unless otherwise specified utilize all available onsite fill material and topsoil first as may be practicable.
   - Follow similar procedure as outlined for using onsite fill material, except use top of placed and compacted fill from onsite sources as the datum as may be applicable.
   - Furnish copies of all bills-of-lading, certified weigh tickets and material quality certifications to the Honeywell Site Superintendent daily for all imported fill material and topsoil.
4. Use datum and terminus survey measurements to calculate insitue volume of material excavated or backfill placed to +/- 1/100 of a cubic yard.

3.6.6.3 Cast-in-Place Concrete

1. The volume shall be calculated using the dimensions of the finished concrete construction as shown on the Construction Drawings.
2. Where field conditions necessitate a deviation from the Construction Drawings that will significantly add to the cast-in-place concrete volume (>5% total increase), Contractor shall follow the CCO Process.

3. Contractor shall markup Construction Drawings with deviations noted and furnish copies to Honeywell Site Superintendent with CCO request.
4. Calculate cast-in-place concrete volume to +/- 1/100 of a cubic yard.

3.6.7 Weight Basis

3.6.7.1 Items specified as measured on a weight basis shall be measured using a certified scale in accordance with the manufacturer's recommendations and applicable agencies having jurisdiction.

3.6.7.2 Furnish copies of all bills-of-lading (if applicable) and certified weigh tickets to the Honeywell Site Superintendent daily.

3.6.7.3 Using the data collected from the certified weight tickets calculate the weight of material to +/- 20 pound or +/- 1/1000 of a ton. Payments will be made in accordance with the progress payment provisions specified.

3.7 ENGINEERING & SURVEY SERVICES

3.7.1 Qualification Requirements

3.7.1.1 Submit Engineer and Land Surveyor statement of qualifications to Honeywell for review and acceptance before commencing any Work requiring these services as defined below.

3.7.1.2 Any special survey requirements and deliverables such as GPS, data management formatted drawings and figures, etc., will be stipulated in the technical specifications. Contractor shall verify surveying subcontractor meets all the requirements stipulated in this section and in the Technical Specifications.

3.7.2 Engineering

3.7.2.1 Professional Engineer, when needed for the successful completion of the work, must be licensed in the State where the Work will take place and the appropriate discipline for the service provided.

3.7.3 Surveying

3.7.3.1 Land Surveyor, when needed for the successful completion of the work or for measurement payment purposes, must be registered in the State where the Work will take place.

3.7.3.2 Sequence surveying in each designated area as may be appropriate for Work or as otherwise directed by the Honeywell Site Superintendent.

3.7.3.3 Submit for Honeywell's written approval at least 10 workdays in advance of survey work, survey methods and equipment to be used. Work done using methods or equipment not agreed to by Honeywell shall be subject to removal and replacement.

3.7.3.4 Notify Honeywell at least 2 working days in advance of survey activities planned.

3.7.3.5 Submit related surveyor information, calibration certificates, field notes, and as-built drawings.

3.7.4 Survey Control Points

3.7.4.1 Survey Control Point Requirements

1. Establish survey control reference points prior to starting work.
2. Use appropriate offset staking method for grade markers and other construction control points that interfere with the Work.
3. Protect and preserve survey control points during construction.
4. Site reference points shall not be relocated without Honeywell's prior written approval.
5. Report dislocated, damaged or destroyed reference point to Honeywell Promptly.
6. Replace dislocated, damaged or destroyed survey control points as per original survey.

3.7.4.2 Survey Monuments (GPS Specs)

1. Offsite control monuments shall be used as a reference for onsite monuments (when specified), as onsite monuments are expected to settle during construction.
2. Unless otherwise specified the Control Datum shall be horizontal coordinate grid system as per the Construction Drawings and the National Geodetic Vertical Datum (NGVD).
3. Onsite monuments (when specified) shall be checked not less than monthly against offsite monuments until job completion.
4. Reference site survey and reference points to offsite control monuments and record locations of all survey control points, using the Control Datum, on As-Built Drawings.

3.8 TEMPORARY FACILITIES

3.8.1 Temporary Facility Requirements

3.8.1.1 Furnish, when appropriate, sufficient temporary facilities for field office, sanitary, construction and drinking water, storage, telephone, fax machine, health, safety or other facilities required to successfully complete the work in hot, cold, wet, or other inclement weather.

3.8.1.2 The Site Superintendent will designate areas for construction trailers or offices, parking, lay-down, and storage of Products and equipment.

3.8.1.3 Electrical power, water, gas and other utility connections available onsite are defined within the Contract Documents

3.8.1.4 Utility connections to existing sources are subject to Honeywell authorization.

3.8.2 Potable Water

3.8.2.1 Provide and maintain an adequate supply of clean potable water for construction, testing, decontamination, cleanup, dust control, safety, equipment and domestic consumption, and any facilities needed to convey or store the water.

3.8.3 Sanitary Facilities

3.8.3.1 Provide and maintain an adequate number of sanitary, chemical type, temporary toilets for the use of personnel employed by the Contractor, Subcontractors, Honeywell and authorized visitors. These facilities shall conform to the requirements of all state, county, and local ordinances and shall be kept clean and maintained in good working order at all times.

3.8.4 Storage

3.8.4.1 Furnish, as necessary, temporary buildings or trailers required for the storage and protection of Honeywell or Contractor supplied Products.

3.8.4.2 All Products shall be stored neatly and in such a way to allow for Contractor's Work, activities of the Operating Facility and others authorized to access the site to proceed in a safe and orderly manner.

3.8.4.3 Provide facilities to store and protect Products received on site.

1. Maintain adequate cover and other protection in accordance with industry best practice, MSDS or manufacturer's guidelines, as may be applicable.
2. Store sensitive Products in weather tight, climate controlled, enclosures
3. Maintain Product with documentation, MSDS, seals, nameplates, match marks and labels intact and legible.

3.8.4.4 Establish adequate exterior storage (lay-down) area as may be applicable for efficient materials handling throughout project duration.

3.8.4.5 Cover with impermeable sheet covering, provide ventilation to prevent condensation and prevent contact with ground for:

1. Products subject to degradation or weather / moisture damage.
2. Fabricated Products stored outside.

3.8.4.6 Store loose granular materials on solid flat surfaces in a well-drained area

1. Prevent mixing with foreign matter.
2. Keep covered with impermeable sheeting if weather impacts are a concern.
3. Control storm water runoff and run-on.

3.8.4.7 Provide offsite storage and protection when site does not permit adequate onsite storage or protection.

3.8.4.8 Machinery stored for 3 months or more shall be maintained in accordance with industry best practices and manufacturer guidelines.

1. Maintenance shall include, but is not limited to:
   - Lubrication of non-painted or exposed carbon steel surfaces;
   - Lubrication of bearings and shaft rotation;
2. Maintaining a moisture and dirt free environment for air movers, compressors, pumps, etc.
3. Include necessary details for these machinery maintenance items in the Operations Plan.
4. Record all maintenance activities on monthly inspection log.

3.8.4.9 Inspect to verify Products are undamaged and in acceptable condition at least monthly.

1. Maintain detailed Inspection Log for all Products.
2. Submit copies of recent inspection log entries to the Site Superintendent monthly.

3.9 PROTECTION OF WORK

3.9.1 Protect and preserve all Products and Work that has been or will be performed by Contractor, Subcontractors, Honeywell, or others from Contractor's operations, the actions of others working in the same areas, loss, damage, weather affects or tidal fluctuations.

3.9.2 Immediately notify the Site Superintendent of any lost, damaged, deteriorated or otherwise defective Product or Work.

3.9.3 Exercise extreme care to prevent damage to existing telephone lines, power lines, water mains, sewer or gas lines, and other aboveground or below ground structures.

3.9.4 Immediately notify the Site Superintendent of any damage to existing aboveground or below ground structures, as well as the utility or third parties having jurisdiction over the damaged facilities.

3.9.5 Replace all missing items.

3.9.6 Replace any damaged or defective Products or Work to the condition required by the appropriate Specification.

3.9.7 Alternately, the Contractor may petition the Site Superintendent for written permission to repair, clean, or restore any damaged or defective Products or Work to the condition required by the appropriate Specification.

3.9.8 The Site Superintendent shall agree to all materials, methods and procedures used to repair, clean, or restore damaged Products and Work.

3.10 MANUFACTURERS' FIELD SERVICES

3.10.1 When specified in the Contract Documents, provide services of an authorized Vendor technical representative to:

1. Supervise the field construction activities, installation, adjustment and testing
2. Monitor and instruct for quality and workmanship for the Product supplied.
3. Inspect, check, and agree to installation prior to start-up
4. Instruct operations and maintenance personnel.

3.10.2 Vendor's technician is subject to Honeywell approval.

3.10.3 Submit technician qualifications ten workdays in advance of such Work.

3.11 HOUSEKEEPING

3.11.1 Keep the Site neat at all times and free of accumulation of scrap, trash, rubbish, and debris related to site work.

3.11.2 Maintain all parking areas, roadways, and traffic areas impacted by site work free of spilled materials, tracked soil, and debris on a daily basis.

3.11.3 Maintain work areas, passageways, and stairs, in and around buildings or other structures in a clear, unobstructed and orderly manner.

3.11.4 Soil, rubbish, debris, waste material, etc. on ROW's, roadways, railways and in support areas must be collected, and placed in a designated area within the work zone each day.

3.11.5 Construction Manager shall inspect such Work areas daily before Work begins, as the workday ends and whenever working conditions change, to ensure housekeeping practices are observed.

3.11.6 Debris shall be promptly removed from Work Areas during the course of construction as it is generated.

3.11.7 Immediately clean up any spillage and return to its originally intended use, if appropriate, or dispose of in accordance with the Contract Documents.

3.12 MANAGING WASTE MATERIAL

3.12.1 Managing Waste Material Requirements

3.12.1.1 Manage all handling, segregation, construction water, stabilization, containerizing, storage and loading for transportation all waste materials resulting from the performance of the Work.

3.12.1.2 All waste storage, staging, and loading areas shall be in a location determined by Honeywell and/or any regulatory agency having jurisdiction for the project.

3.12.2 Waste Handling

3.12.2.1 Handle collected silt and sediments from erosion control devices similar to excavated materials.

3.12.3 Waste Segregation

3.12.3.1 Segregate rubbish, construction debris, hazardous wastes and non-hazardous wastes based on generator knowledge.

3.12.3.2 Further segregate non-hazardous wastes (contaminated or uncontaminated) in a similar manner.

3.12.3.3 Keep wastes of unknown classification separate from other wastes and manage as if they were hazardous until a waste determination has been made.

3.12.3.4 If wastes cannot be classified based solely on generator knowledge, collect waste samples as directed by Honeywell.

3.12.4 Construction Water

3.12.4.1 Construction water shall include groundwater, wastewater, rinsates, dewatering effluents, decontamination fluids and other uncontaminated non-hazardous aqueous liquid.

3.12.4.2 Collect and drum, load into tankers, temporarily store for reuse, and/or treat through wastewater treatment facility (as applicable) Construction Water for disposal in a safe and environmentally responsible manner.

3.12.5 Waste Containers

3.12.5.1 Furnish appropriate containers (Metal dumpsters with secure lids or covered roll off containers) for construction debris and/or uncontaminated non-hazardous waste as may be required.

3.12.5.2 Waste shall be disposed of at frequent and regular intervals as may be required to prevent the overfilling of such container(s).Place non-hazardous solid wastes, construction debris, and rubbish in containers in accordance with this specification, as may be appropriate

3.12.5.3 Visually inspect all containers of wastes for leaks or damage prior to being loaded for transportation and off-site disposal. Transfer contents of leaking or damaged container to another container or overpacks, and re-inspect prior to loading. Clean up, containerize, and label spilled materials for disposal in accordance with the Contract Documents.

3.12.5.4 Any material that spills out of containers shall be immediately cleaned and placed back into the waste containers.

3.12.6 Waste Transportation and Disposal

3.12.6.1 Dumpsters should be emptied every two weeks, when full, or at the discretion of the Site Superintendent. There shall be no liquid allowed in the containers, and there shall be no waste material buried on site. Train all Contractor and Subcontract personnel on correct waste disposal procedures.

3.12.6.2 Honeywell shall agree to the selection of disposal facilities in advance, in writing.

3.12.6.3 Dispose of waste oils and petroleum products generated during site work in a **safe and environmentally** responsible manner.

3.12.6.4 A Honeywell Representative will sign all waste profile sheets for waste characterization and manifest(s) for offsite waste disposal of all regulated site generated waste.

3.12.7 Rubbish and Construction Debris

3.12.7.1 Rubbish and clean construction debris, metal, wood, office trash, etc. or other non-contaminated materials may be disposed of at approved local landfill or salvage company.

3.12.8 Non-Hazardous Wastes

3.12.8.1 Load, transport and dispose of uncontaminated non-hazardous wastes generated in performance of the Work.

3.12.8.2 Load, transport and dispose of non-hazardous wastes generated.

3.12.8.3 Waste containers shall be "sealed" non-leaking dumpsters, or equivalent, maintained to prevent leakage.

3.12.8.4 Before waste containers become full, dispose of waste offsite.

3.12.8.5 If required, dispose of non-hazardous wastes at permitted off-site facility using a permitted waste transporter.

3.12.8.6 A non-hazardous waste manifest or Bill of Lading, signed by Honeywell, shall accompany each waste shipment. The original paperwork, stamped received and signed by the disposal facility, shall subsequently be returned to Honeywell.

3.12.8.7 Furnish all paperwork to Honeywell.

3.12.9 Hazardous & TSCA Waste

3.12.9.1 Honeywell will Contract the transportation and disposal (T&D) of all hazardous wastes requiring off-site disposal directly with the T&D facility. Honeywell will decide who will be responsible for waste characterization.

3.12.9.2 Manage hazardous wastes in accordance with RCRA or TSCA regulations.

3.12.9.3 Place drummed wastes in a lined temporary staging area with berms, aisle space, stacking height, periodic logged inspections, storm water management, and security in accordance with applicable RCRA regulations for drum management.

3.12.9.4 Furnish itemized estimated volumes for Hazardous and TSCA Wastes to be generated by Contractor's operations (decontamination waste, used PPE, emergency response waste, etc).

3.12.9.5 Place waste materials for offsite disposal in the proper transportation containers, label waste container(s), sample and characterize waste, provide temporary storage, prepare waste manifest, coordinate transportation with Honeywell.

3.12.9.6 Contractor to coordinate the management, handling, transport and offsite disposal of hazardous or TSCA regulated wastes resulting from Remedial Action work and Contractor's onsite operations.

3.12.9.7 Allow seven working days for Honeywell to review and agree to the characterization and manifest documentation prior to scheduling transportation.

3.12.9.8 Honeywell shall select waste transportation and disposal contractor(s) and issue necessary Purchase Order(s).

3.13 PROHIBITIONS

3.13.1 Prohibited construction practices include but are not limited to the following:

1. For any stream corridor, wetland, surface water, or any unspecified location:
   - Dumping of spoil material
   - Indiscriminate, arbitrary or capricious operation of equipment
   - Pumping of silt-laden water from trenches or other excavations
   - Disposal of trees, brush and other debris
2. Permanent or unspecified alteration of the flow line of any stream.
3. Dynamite or other explosive blasting.
4. Open burning of construction project debris.
5. Disposal of de-watering fluids (need authorization)

3.14 STANDBY TIME (DELAY TIME)

3.14.1 Standby time will be defined as time that Contractor is not permitted to conduct scheduled productive work tasks for any outside influence not discussed or presented in the Scope of Work or any other part of the Contract Documents.

3.14.2 Standby time does not apply to those items specifically defined as being included in the Scope of Work. Standby time likewise does not apply too the work items that are considered incidental to the Work as defined by the Contract Documents.

3.14.3 Standby time will apply to those tasks, as approved in writing by Honeywell, that are delayed or otherwise interrupted by the following:

1. Change in the Scope of Work as initiated by other parties other than the Contractor or their designees,
2. Change in the Design as initiated by parties other than the Contractor or their designees,
3. Changes in Site Conditions,
4. Work stoppage for the convenience of Honeywell

3.14.4 The following provisions will be included as further definition and applicability of Contractor standby time:

1. Honeywell must agree in writing to all labor and equipment standby costs.
2. Contractor must specify all requirements with itemized and total costs associated with overtime, weekend or holiday standby requirements. Honeywell must likewise accept these requests in writing.
3. Honeywell will not provide standby compensation to the Contractor for any equipment or labor that is on site for the Contractor's convenience and is not necessary for the work that is impacted by standby activities
4. Honeywell will not provide standby compensation to the Contractor for any equipment or labor that was not scheduled to be used on the day that Honeywell initiated the action for the standby time. Likewise, if the action occurred on a weekend or holiday, compensation will not be made for any equipment or labor that is on site the first work day following the off-hour event.

5. A standby event does not necessarily impact the entire project. If other productive tasks can be performed during the time when one or more discrete work tasks are impacted by the delay, the Contractor shall redirect resources to other work activities to mitigate the requirement for standby time.
6. Honeywell will not pay standby time for any equipment or labor that can be or is used productively for other work tasks.
7. No standby time will be paid for weekends or Federal Holidays.

3.14.5 Honeywell will expect to develop a cost basis for Contractor standby time for each Contract and further break down the cost structure to capture the costs required for each work item included in the Scope of Work. The costs for standby time will be developed with the following provisions:

1. Standby for equipment will be paid based upon the lesser of the following:
   - A prorated amount of the daily rate for equipment on site 3 workdays or less, or,
   - A prorated amount of the weekly rate for equipment on site 3 workdays or more, or,
   - A prorated amount of the monthly rate for equipment on site for 14 workdays or more, including mobilization, demobilization and standby time.
   - All prorated amounts shall be on an hourly basis not to exceed 8 hours per workday.
2. Standby for labor will be paid on the following basis:
   - straight time hourly rate
   - On the day that a standby is initiated, if Honeywell announces standby before 10:00 AM, all employees scheduled to work that day and were on site for their scheduled work, will be paid for 4 hours of work. If Honeywell announces standby after 10:00 AM, all employees scheduled to work that day and were on site for their scheduled work will be paid for 8 hours of work.
   - Only those employees that are necessary to be on site for health, safety, environmental and security reasons, as accepted by Honeywell in writing, will be paid for 8 hours per workday for the duration of the standby event. Contractor shall not be compensated for any employees not accepted by Honeywell as necessary for a standby event.

4 PRE-CONSTRUCTION WORK

4.1 APPROVAL SUBMITTAL(S)

4.1.1 Submit detailed network construction schedule within five workdays of contract award.

4.2 KICKOFF MEETING

4.2.1 The Site Superintendent will schedule a pre-construction kickoff meeting at the site or other convenient location before Work starts.

4.2.2 The meeting will provide an overview of the following project requirements:

1. Project Scope, Schedule, Invoicing Procedure, Construction Change Order Procedure, Contractor Submittals, Working in Operating Facilities, Site Access and Security, Health and Safety, Temporary Facilities, Coordination of Work, Permit Requirements, Materials Management, QA/QC, Managing Waste.

5 MOBILIZATION & SITE PREPARATION

5.1 MOBILIZATION

5.1.1 Provide and setup field office(s), office supplies, sanitary facilities, change trailers, First Aid and PPE supplies, temporary power, small tools and equipment.

5.1.2 Coordinate with Honeywell the following mobilization activities:

1. Location of field offices, sanitary facilities, lay-down areas and temporary storage facilities
2. The agreed to location for construction field offices, storage, site access, parking and employee entry to Facility shall be as identified in the Construction Documents and will be reaffirmed at the Kickoff Meeting.

5.2 **LAYOUT OF WORK AND SITE CONDITIONS**

5.2.1 Within ten workdays after moving onto the job site, inspect any previous work performed by others such as foundations, anchor bolts, pipe stub ups, valve locations, etc., upon which Contractor's subsequent work will depend.

5.2.2 Accept, reject, or note exceptions to all such previous work through written notification to the Site Superintendent.

5.2.3 Verify the existence of any overhead or underground obstructions.

6 CONSTRUCTION WORK

6.1 CIVIL WORK

6.1.1 Storm Water Management, Soil Erosion and Sedimentation Control

6.1.1.1 Storm Water Management, Soil Erosion and Sedimentation Control Requirements

1. When required by the Scope of Work or the Specifications, furnish necessary Storm Water, Erosion Control and Sedimentation Control measures.
2. Soil Erosion Control and Sedimentation Control measures shall include:
   - Temporary berms, diversions, or other barriers including hay or straw bales, stone, silt fences or other agreed to materials that are constructed to retain sediment onsite by retarding and filtering storm runoff and prevent migration of silts and sediment to receiving waters.
3. Install erosion and sedimentation control measures prior to all construction activities.
4. Maintain control measures during earthwork activities.
5. Keep land disturbance to a minimum and schedule re-stabilization immediately after any disturbance, as is practicable.
6. Inspect all control measures weekly, immediately after each rainfall of greater than 1/2 inch in any given week, and at least daily during prolonged rainfall.
7. Repair any failed control measure immediately. Perform maintenance as needed.
8. Remove all sedimentation and erosion control barriers after completion of construction and permanent control measures are installed.
9. Conform to all State, County and Local erosion and sedimentation control measures and (if applicable) as specified in the Storm Water Management, Soil Erosion and Sedimentation Control Plan.
10. Immediately adjust or institute additional control measures if planned control measures are not effective or satisfactory to the regulatory agencies having jurisdiction.

6.1.1.2 Storm Water Management, Soil Erosion and Sedimentation Control Plan

1. *Submit to Honeywell two copies of a detailed Storm Water Management, Soil Erosion and Sedimentation Control Plan during construction and the one-year post-construction guarantee period. Plan should be submitted prior to construction activities for Honeywell review and approval.*
2. Maintain copy of this plan at the site
3. The plan should include:

- Chronological completion dates for each temporary (and permanent) measure for controlling erosion and sediment.
- Location, type and purpose for each temporary measure to be undertaken.
- Dates when those temporary measures will be removed.
- Materials to be used

6.1.1.3 6.1.1.3 Storm Water Control

1. Provide adequate storm water runoff control, treatment and disposal measures.

6.1.1.4 Soil Erosion Control Measures

1. Provide silt fences, hay bales or other control measures as may be needed during construction to prevent soil erosion from construction site.
2. Anchor all topsoil stockpiles with straw mulch and encircle with hay bales.
3. Silt fences or hay bales shall be installed at the toe of all critical cut and fill slopes.
4. Protect catch basins (sumps) with silt fences or hay bales throughout or until all disturbed areas are stabilized.
5. Grade surfaces per the Contract Documents and Manufacturer guidelines, prior to installation of erosion control fabric.
6. Diversion terraces shall be installed on the uphill side of disturbed areas to divert surface runoff away from unstable slopes, and the project area, as may be required.
7. Interceptor channels shall be used across disturbed areas where the slope is running parallel to direction of trenches to divert runoff to outlets on lower side of disturbed area and shall be arranged to minimize erosion impact, as may be required.
8. Trench barriers of earth-filled sacks or piled stone, stacked to top of trench shall be constructed to prevent trench washout, after installation of piping, if backfill operations are delayed, as may be required. Trench shall be sloped in the direction of piping.
9. Tie hay/straw bales (14" x 18" x 30" or greater) securely. Utilize two #3 concrete reinforcing bars or two 2" x 2" hardwood stakes for each hay/straw bale to secure to the ground.

6.1.1.5 Sediment Control Measures

1. Periodically remove sediment from temporary control structures and permanent drainage facilities as needed.
2. Dispose of sediment per the Contract Documents – prevent additional erosion or pollution.
3. Sediment barriers shall be constructed at storm drain sumps; across minor swales / ditches; and other low-strength temporary applications, as may be required.
4. Unless otherwise specified, construct silt fences using reinforcement geotextile prefabricated to 24" height units with 4' stake spacing.
5. Unless otherwise specified, install 2" x 2 x 36" hardwood post or standard T or U section steel posts (1.33 #/lf min.) for silt fences.

6.1.2 Earthwork

6.1.2.1 Conduct all earthwork activities to mitigate dispersion of volatile organic emissions and fugitive dust beyond the Work Area.

6.1.2.2 Comply with all requirements of the Storm Water Management, Soil Erosion and Sedimentation Control Plan for the duration specified in the Plan.

6.2 MECHANICAL WORK

6.2.1 Equipment

6.2.1.1 Installation of Machinery and Materials

1. Use Certified Shop Drawings, installation drawings, and manufacturer instructions when installing Machinery.
2. Mechanics shall be competent, experienced, skilled in handling, setting, aligning, leveling, and adjusting the Products and shall install Products in accordance with manufacturer recommendations.
3. Use proper tools equipment, and materials to rig and assemble Products to prevent deforming or marring the surface of shafts, drive components, mating surfaces, threaded parts, etc.
4. Furnish all fasteners, supports, brackets, bracing and other appurtenances required for a complete installation.
5. Do not force or drive couplings, gears, sheaves, etc. on machinery shafts nor subject them to an open flame or torch, use only oil bath heater or similar method.
6. Apply a molybdenum disulphide anti-seize compound to all threads in mechanical connections such as bolts, studs, cap screws, tubing, etc. unless otherwise indicated.
7. Products shall not be altered or repaired, and no burning or welding will be permitted on any parts having machined surfaces, except by written permission of Honeywell.
8. No rigging shall be done from any structure without the permission of Honeywell,
9. Furnish and install appropriate fittings or plugs in lubrication holes to prevent entry of moisture or foreign material.

6.2.1.2 Alignment & Leveling of Equipment

1. Equipment shall be carefully set and aligned on foundations to proper orientation and elevation and shimmed to true level.
2. Equipment baseframe shall be tightened to bear against shims.
3. Equipment shall be checked after securing to foundations and, after confirmation of level and elevation shall be grouted in place.
4. Rotating equipment shall be initially aligned using stainless steel shims while equipment is free form any external loads.
5. Correctly align piping to associated equipment to prevent stress at pipe connections. Springing of pipe to align with mating equipment flanges is not permitted.
6. Mis-aligned holes shall be reamed. "Driving" of fasteners or keys will not be permitted.
7. Check rotating equipment angular and parallel alignment and adjust to manufacturer's specifications before testing or placing any Machinery into service.
8. *Submit actual alignment data records to Honeywell.*

6.2.1.3 Equipment: Anchor, Shim and Grout

1. Furnish anchor or expansion bolts, as specified or otherwise required.
2. Use expansion bolts only where shown or agreed to by Honeywell.
3. Anchor and expansion bolts shall be of specified materials with heavy hex head nuts.
4. Anchorage items shall conform to Contract Document requirements.
5. Provide all steel shims, grout packing, or other materials necessary to properly level, and secure equipment in place.
6. Wedging is not permitted.
7. Use least number of flat shims possible in leveling equipment.
8. Shims shall be clean and free of slag.
9. When requested by Honeywell, demonstrate that all elements so required are level and plumb.
10. Grouting shall conform to Contract Document requirements.

6.2.2 Piping and Pressure Bearing Systems

6.2.2.1 Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building.

6.2.2.2 Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

6.2.2.3 In finished areas (except as otherwise indicated), conceal pipes, ducts, and wiring within the construction.

6.2.2.4 Furnish all fasteners, gaskets, lubricants, sealants, hangers, supports, brackets, braces, bracing, and other appurtenances required for a complete installation.

6.2.2.5 Tighten connections requiring gaskets evenly all around to ensure uniform stress over the entire gasket area.

6.2.2.6 Pressure test all piping and pressure bearing Systems in compliance with ASME, API or other relevant industrial standards.

6.2.2.7 Maintain all <u>Pressure Test Reports</u> on site and accessible at all times.

6.2.2.8 *Submit copy of <u>Pressure Test Report</u> to Site Superintendent immediately following test.*

7 STARTUP & COMMISSIONING

7.1 STARTUP

7.1.1 General Requirements

7.1.1.1 Coordinate all start-up activities of various Systems included in the project.

7.1.1.2 Notify Honeywell 10 workdays prior to start-up of each System. Approved O&M manuals should be available prior to training.

7.1.1.3 Verify the following:

1. Each piece of Machinery or System Component has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions, which may cause damage.
2. Tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
3. Wiring and support components for equipment are complete and tested.

7.1.1.4 Comply with the requirements of applicable manufacturer's representative and in accordance with manufacturers' instructions.

7.1.1.5 Adjust operating equipment to ensure smooth and unhindered operation.

7.1.1.6 Within thirty days of completion of the performance test, submit a certificate from the manufacturer (or installer ,as may be appropriate) stating the following:

1. Equipment was satisfactorily installed and tested and is ready for operation,
2. Operating and maintenance personnel were suitably instructed in the operation, lubrication, and care of the equipment.
3. Manufacturer or authorized (key) manufacturer representative should certify in writing proper installation and training was provided.
4. Honeywell will determine who is responsible for utilities, chemicals, etc. during the start-up.
5. A prove-out period should be included to ensure that the facility as a whole operates as intended.
6. Contractor will be responsible for updating the O&M manual during the first year of operations if activities are changed or further defined.

7.2 COMMISSIONING

7.2.1 Operation and Maintenance Training

7.2.1.1 Unless otherwise specified, training time shall be a minimum of one eight-hour workday.

7.2.1.2 Utilize Installation Operation and Maintenance Manuals as basis for instruction. Review contents of manual with Honeywell in detail to explain all aspects of operation and maintenance.

7.2.1.3 Demonstrate operation and maintenance of Products to Honeywell and O&M Contractor (if applicable) 10 workdays prior to date of final inspection.

7.2.1.4 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of Machinery.

7.2.1.5 Demonstrate seasonal requirements for Machinery or Systems requiring seasonal operation.

8 SITE RESTORATION & DEMOBILIZATION

8.1 DEMOBILIZATION

8.1.1 Provide Honeywell with an inventory listing all surplus materials.

8.1.2 Unless otherwise directed by Honeywell, remove all Temporary Work, tools and equipment at Work completion.

8.1.3 Properly decontaminate all tools and equipment before removal from site.

8.1.4 Properly decontaminate all supplies and materials before removal from site, or manage as waste materials in accordance with the requirements of this specification.

8.1.5 Remove all Temporary Facilities at the conclusion of the project.

9 CONTRACT CLOSEOUT

9.1 CLOSEOUT PROCEDURE

9.1.1 Notify Honeywell and Facility Operations when Work is Substantially Complete.

9.1.2 Submit inspection reports and Certificates of Occupancy as required by the Contract Documents or by authorities having jurisdiction.

9.1.3 Submit Signed and sealed as-built survey showing final grades and lines.

9.1.4 Submit the Final Closeout Report which shall include the following information:

- *Project Summary highlighting project objectives were achieved*
- *Health and Safety Closeout Documentation*
- *Final OSHA Man-hour summary*
- *Off-site disposal Record*
- *Project Photographs*

9.1.5 Accompany Honeywell and Facility Operations on Substantial Completion inspection and document Punch List items as needed.

9.1.6 Rectify all Punch List items.

1. Provide detailed written resolution for each Punch List item.

9.1.7 Submit to Honeywell and Facility Operations written certification of Substantial Completion that addresses the following:

1. *Contract Documents reviewed and updated or markups provided,*
2. *Work is complete, inspected and in accordance with Contract Documents*
3. *Work is ready for Honeywell Final inspection.*

9.1.8 Accompany Honeywell and Facility Operations on Final inspection and verify all Punch List items have been rectified to Honeywell's satisfaction.

9.1.9 Repeat Punch List and final inspection processes as necessary.

9.2 SURPLUS MATERIAL

9.2.1 Upon completion of the project, inventory all surplus materials.

9.2.2 All surplus materials purchased by contractor via Lump Sum contract remains the property of the contractor and must be removed from the site.

9.2.3 All surplus materials purchased/supplied by Honeywell remains the property Honeywell and is to be stored onsite in area determined by Honeywell.

9.3 SPARE PARTS AND MAINTENANCE PRODUCTS

9.3.1 Provide spare parts, maintenance, and any other extra Products in quantities specified in the Contract Documents.

9.3.2 Deliver to Project site and place in location as directed by Honeywell; obtain receipt prior to final payment.

9.3.3 All spare parts should be securely labeled with equipment name, part description, and number, quantity, etc.

9.4 FINAL DOCUMENTATION SUBMITTAL

9.4.1 Submit all final "As Built" Contract Submittals at or before Closeout Meeting.

9.4.2 Submit final Photographic / Video Records of Work progress and events.

9.4.3 Return all copies of Contract Documents.

9.4.4 Surrender all other project related: photographs, negatives and videos (whether provided by Honeywell or otherwise acquired by Bidder)

9.4.5 For any missing documentation or records, provide an itemized listing of each missing item with appropriate designation name and number, and a statement explaining why Contractor is unable to return specific items.

9.4.6 Provide sign-off sheet for contractor and Honeywell.

9.5 CLOSEOUT MEETING

9.5.1 Attend Project Closeout Meeting

9.5.2 Project Closeout Meeting shall be scheduled within eight (8) weeks of project completion.

Specification Section 01100
Remediation Construction Requirements

ATTACHMENT 01100-1
Daily Activities Report

CONTRACT DAILY ACTIVITIES REPORT

The Contract Daily Activities Report is to be completed by the Contractor on the morning following the day reported and turned in to the Honeywell Construction Representative by eight (8) a.m. of that same day. Each daily report must be numbered sequentially within a contract (or unit shift area, etc.) and there should be one number for every day the Contractor is on site. If the Contractor has performed no work on a particular day, the report must indicate the reason no work was performed. It should also indicate the reason no work was performed, such as holiday, weather, lack of materials, etc. If the Contractor is scheduled off site for a period of time, a single report may cover this period if the dates and reasons for his being off site are covered explicitly. The Honeywell representative must then review the report in the afternoon, complete his comments, and return a copy of the report to the Contractor by the end of the day following the reported period.

The Contract Daily Activities Report form is divided into five separate sections:

1. The first section contains general information to identify the contractor, date, shipment location, report number, etc. This section must always be completed.

2. The second section is for listing the Contractor's manpower and major construction equipment.

   All units on site shall be recorded in the count including those units of equipment not working on contract work (such as when the Contractor is utilizing units of equipment for its own benefit and maintenance of its own facilities, etc.) which shall have "0" reported under hours.

3. The third section "Description of Work Performed Today" should report all major types of work areas in which work was performed.

4. The forth section "Remarks by Contractor" is to record any and all unusual or non-routine events which affect operations, such as interruptions, delays, conflicting instructions, inclement weather, labor disputes, accidents and the like. This may include the receipt of a work order. It may detail a delay occasioned by Honeywell, another contractor or the Contractor's own operation. The arrival and departure from site of second subcontractors should be noted, as well as major changes in Contractor's methods of operating. This section should record the details of materials received from Honeywell or others, problems with temporary facilities, or services. Where the remarks in this section outline a problem, they should also state what solution has been proposed or who is responsible for

resolving the problem. An absence of any reference in the Contract Daily Activities Report to unusual or non-routine events will indicate that there were no such occurrences.

The Contractor's responsible representative must sign and date the report, thus placing his remarks (or silence) on record.

5. The final section of the report is designed for the Honeywell Representative to complete any information missing from the first four sections, indicate any disagreements which Honeywell may have with the Contractor's reporting, or to make comments relevant to the contract. The Honeywell Representative must sign and date each daily report thereby verifying or rebutting the information supplied in the previous four sections by the contractor and returning a copy to the Contractor.

CONTRACTOR DAILY ACTIVITIES REPORT

RES Project No.____________________ Date_______________

Report No.______________

Project Title____

Area__________Unit___________Work: Contract(√)__________WO # __________

Shift_________Hrs. Wkd: From_______To________Weather____________________

Temp. L H

MANPOWER	NO.	TOTAL HRS.	MAJOR EQUIPMENT	NO.	TOTAL HRS.

DESCRIPTION OF WORK PERFORMED TODAY:

REMARKS BY CONTRACTOR: (Delays, Interruptions, Deviations, Extra Work Activities, Unusual Occurrences. etc., Relevant to Today's Work)

For Contractor: Title: Date:

HONEYWELL COMMENTS AND/OR EXCEPTIONS:

For Honeywell: Title: Date:

Specification Section 01100
Remediation Construction Requirements

ATTACHMENT 01100-2
Construction Change Order Procedure

SUBJECT: Initiating and Monitoring of Construction Change Orders (CCO).

PROCEDURE:

This procedure is an attachment to the governing contract and presents the only acceptable procedure to be followed for the completion of extra work under the contract.

Contractor will manage, execute, supervise, coordinate and is responsible for the estimate, quality, completeness and effectiveness of the extra work performed by its own personnel or subcontractor. All approvals referred to herein will be confirmed in writing on each appropriate CCO form.

Construction Change Orders:

Form CC-145, Lump Sum,
Form CC-146, Cost Plus, and
Form CC-147, Unit Price

will be issued to support all work required and performed by Contractor which work is in addition to the Scope of Work defined in the contract.

INITIATING OF CONSTRUCTION CHANGE ORDER - REQUEST AND PRICING PROCEDURE

Responsibility		Action
Contractor or Honeywell Construction Representative	1.	Recommends need for extra work.
Honeywell Construction Representative	2.	Prepares top half of appropriate CCO form, including a detailed Scope of Work and conditions necessitating the work.
	3.	Forwards CCO form to the Contractor for calculation and entry of the total cost of the work and the effect extra work will have on the schedule (if any).
Contractor	4.	Completes and signs CCO form with Total Lump Sum Cost, or Total Control Cost Estimate for the extra work specified and the effect on the schedule extra work will have and submits to Honeywell Construction Representative.

(Total cost is defined as all costs associated with the CCO and shall include all labor, materials, supervision, rental of equipment and Mark-ups for overhead and profit and any costs related to schedule extension).

Honeywell Construction Representative	5.	Reviews and approves contractor's specified cost and change(s), if any, to schedule. Returns signed CCO form to Contractor as authorization to proceed with work.
Contractor	6.	Begins work outlined on CCO form.
Honeywell Construction Representative	7.	Distributes authorized copies of CCO form to Honeywell Personnel: • Honeywell's Construction Representative • Project Manager • Purchasing Department • Job File (Jobsite)
Project Manager	8.	Issues to Purchasing on a monthly basis, a request for issuance of a change order to cover authorized CCO's.
Purchasing	9.	Issues a change order to the appropriate purchase order consistent with Project Manager's request, covering all authorized CCO's.

<u>IT IS TO BE CLEARLY UNDERSTOOD THAT NO EXTRA WORK IS TO BE PERFORMED BY CONTRACTOR UNLESS AND UNTIL CONTRACTOR HAS RECEIVED WRITTEN AUTHORIZATION FROM HONEYWELL IN THE FORM OF AN APPROVED CCO FORM.</u>

CONSTRUCTION CHANGE ORDER STATUS

A. Construction Change Order Status Report

Construction Change Order Status Report, Form CC-148 is prepared, submitted, reviewed and distributed monthly as follows:

Responsibility	Action
Contractor	Submits Form CC-148, with adequate data to support information reported thereon to Honeywell Construction Representative.

B. Cost Status on Cost Plus and Unit Price CCO's

Responsibility	Action
Contractor	Monitors current cost against Total Control Cost authorized on Form CC-145 or 146 or 147. Notifies Honeywell Construction Representative when expenditures equal 80% of control estimates. Alerts Honeywell of any likely overrun of control cost.

Honeywell Construction Representative	When required, initiates Form CC-145 or 146 or 147 for a revised control cost following the same procedure as original Construction Change Order using the same CCO No. followed by an "R" suffix. Reviews CC-148 and verifies % complete. Distributes CC-148 to Honeywell Personnel: • Honeywell Construction Representative • Project Manager • Purchasing Department • Accounting Department • Job File (Job Site)

Terms of Payment

All Construction Change Order costs will be invoiced separately from regular contract work by Contractor. Payments will be made in accordance with terms of the contract upon presentation of complete documentation affirming that the Extra Work was satisfactorily performed according to an approved CCO.

NOTE:

THE HONEYWELL CONSTRUCTION REPRESENTATIVE HAS THE AUTHORITY TO APPROVE INDIVIDUAL CCO'S UP TO A COST OF $5,000.

IF A CCO TOTAL COST IS GREATER THAN $5,000, AUTHORIZATION FROM THE HONEYWELL PROJECT MANAGER IS REQUIRED AND MUST BE SECURED PRIOR TO START OF ANY WORK ON THE CCO.

Honeywell

CONSTRUCTION CHANGE ORDER
COST PLUS

		Purchase Order No.
		Contractor
Honeywell Code of Accounts # ____________ $ ____________ # ____________ $ ____________	*Project No.*	*CC Order No.*
	A.R. No.	*Date Initiated*

Scope of Extra Work(define with specificity): ____________

Conditions Necessitating Work: ____________

Cause:
- ☐ *Scope Change:*
  - ☐ *Plant*
  - ☐ *Process/Project*
  - ☐ *Safety/Regulatory*
  - ☐ *Other* ____________
- ☐ *Design Error/Omission*
- ☐ *Vendor Defect*
- ☐ *Vendor Deliveries*
- ☐ *Overtime*
- ☐ *Weather*
- ☐ *Site Conditions*
- ☐ *Interferences*

Initiated by Honeywell: *Name:* *Title:*

CONTROL COST ESTIMATE

DIRECT COSTS	**Direct Labor (Bare)**	
	Materials	
	Equipment Rental	
	Subcontractor	
	Taxes, Insurance & Fringes on Bare Labor	
	Total Direct Costs	$
OVERHEAD & PROFIT	____ *% of Direct Bare Labor Costs*	
	____ *% of Material Costs*	
	____ *% of Equipment Rental Costs*	
	____ *% of Subcontractor Costs*	
	Total Cost Overhead & Profit	$
TOTAL	**Control Cost Estimate**	$

THIS WORK DOES/DOES NOT CHANGE THE CONTRACTUAL COMPLETION DATE

☐ DOES NOT CHANGE   DOES INCREASE ☐ DAYS   DOES DECREASE ☐ DAYS

HONEYWELL HAS THE RIGHT TO REJECT ALL COSTS WHICH ARE IN EXCESS OF
CONTRACTOR'S CONTROL COST ESTIMATE

Prepared for Contractor by: *Name:* *Date:*	*Approved for Contractor:* *Date:*	*Authorized by Honeywell:* *Date*

Honeywell CONSTRUCTION CHANGE ORDER

LUMP SUM

Purchase Order No.

Contractor

Honeywell Code of Accounts

#	______	$	______
#	______	$	______

Project No.

A.R. No.

CC Order No.

Date Initiated

Scope of Extra Work(define with specificity): ______

Conditions Necessitating Work: ______

Cause:

- ☐ *Scope Change:*
  - ☐ *Plant*
  - ☐ *Process/Project*
  - ☐ *Safety/Regulatory*
  - ☐ *Other* ______
- ☐ *Design Error/Omission*
- ☐ *Vendor Defect*
- ☐ *Vendor Deliveries*
- ☐ *Overtime*
- ☐ *Weather*
- ☐ *Site Conditions*
- ☐ *Interferences*

Initiated by Honeywell: ***Name:*** ***Title:***

Contractor:

The Total Firm Lump Sum Cost
To Complete the Extra Work Described Above: $ ______

THIS WORK DOES/DOES NOT CHANGE THE CONTRACTUAL COMPLETION DATE

☐ *DOES NOT CHANGE* *DOES INCREASE* ☐ *DAYS* *DOES DECREASE* ☐ *DAYS*

Prepared for Contractor by:	*Approved for Contractor:*	*Authorized by Honeywell:*
Name: *Date:*	*Date:*	*Date*

p:dudys/lumpsum.doc

CC-145

Honeywell

CONSTRUCTION CHANGE ORDER

STATUS REPORT

Contractor	P. O. Number	Period
		___/ /___ through ___/ /___

Const Change Order No.	Description	Amount	Basis *	Percent Completed

* LP – Lump Sum UP – Unit Price CP – Cost Plus

Honeywell CONSTRUCTION CHANGE ORDER

UNIT PRICE

Purchase Order No.

Contractor

Honeywell Code of Accounts
\# ____________ $ ____________
\# ____________ $ ____________

Project No.

A.R. No.

CC Order No.

Date Initiated

Scope of Extra Work (define with specificity): ____________

Conditions Necessitating Work: ____________

Cause:
- ☐ *Scope Change:*
  - ☐ *Plant*
  - ☐ *Process/Project*
  - ☐ *Safety/Regulatory*
  - ☐ *Other* ____________
- ☐ *Design Error/Omission*
- ☐ *Vendor Defect*
- ☐ *Vendor Deliveries*
- ☐ *Overtime*
- ☐ *Weather*
- ☐ *Site Conditions*
- ☐ *Interferences*

Initiated by Honeywell: *Name:* *Title:*

CONTROL COST ESTIMATE

Unit of Work	*Cost per Unit*	Est. No. of Units	*Extended Cost*
		Total Control Cost Estimate	$

THIS WORK DOES/DOES NOT CHANGE THE CONTRACTUAL COMPLETION DATE

☐ *DOES NOT CHANGE* *DOES INCREASE* ☐ *DAYS* *DOES DECREASE* ☐ *DAYS*

HONEYWELL HAS THE RIGHT TO REJECT ALL COSTS WHICH ARE IN EXCESS OF
CONTRACTOR'S CONTROL COST ESTIMATE

Prepared for Contractor by:	*Approved for Contractor:*	*Authorized by Honeywell:*
Name: *Date:*	*Date:*	*Date*

p:dudys/UnitPric.doc

CC-147

Specification Section 01100
Remediation Construction Requirements

ATTACHMENT 01100-3
Receiving and Inspection Report

Honeywell	**ATTACHMENT 01100-3** **RECEIVING AND INSPECTION REPORT**	Pg. 1 of 2	01100 Spec. No.	
		Latest Revision		
		FJL By	May 2003 Date	A No.
Honeywell International, Inc. 101 Columbia Road Morristown, NJ 07962	**Corporate HSER, RES Group** **Remediation Specification**	Document Approval		
		By	Date	

1. Instructions to complete Honeywell Receiving and Inspection Report, Form # 1457:

   A. Under Copy For - The name of local Construction Superintendent.
   B. As Location - The name of location receiving materials.
   C. Under Carrier - The name of carrier, express, rail or motor freight.
   D. Car Number - Freight car number, if any.
   E. Date Received - The actual date received.
   F. Complete or Partial - Careful check shall be made of material against P.O. prior to marking. Indicating completion of order is most important.
   G. Authorization Number - The Allies number which is the G.O. serial number found on the P.O.
   H. R&I Number - The receiving report number. This will start with #1 and follow in strict sequence until the authorization is complete. Numbers are not to be mixed with any other jobs.
   I. P.O. Number - The Purchase Order against which materials are received.
   J. Req. Number - The requisition number which is also in the P.O.
   K. Vendor and Address - Name and Address from which the material was received.
   L. Item Number - The actual item number from the P.O.
   M. Description of Material - Use key words and size. (Do not use P.O. Description only. Describe physically.)
   N. Quantity Received - The actual number of units received.
   O. Unloading Started Date - Show day, month, year, and time started.
   P. Unloading Completed Date - Show day, month, year and time completed.
   Q. Charges Prepaid - Value of freight charges,
   R. Charges Collect - Dollar value of freight charges. (Disregard if information is not available.)
   S. Condition of Shipment - Should any other word except "perfect" be used, then an explanation should be noted in remarks.
   T. Technical Inspection - This will not be filled in unless an Honeywell Representative is required to inspect damage.
   U. Received By - Will be signed by the person assigned to receiving and inspecting materials.

2. Attach all shipping papers, packing slips, etc., to Honeywell's Construction Superintendent's copies.

3. The original and three (3) copies are to be submitted to Honeywell Field Office for signing by the close of business the same day that the materials arrive at the job site. All R&I Reports are to enable Honeywell Clerk to get copies of this in the mail on the same day. Any materials received after one (1) hour before quitting time will be written up the next morning.

4. Honeywell will furnish Receiving Report Forms for the receiving of Contractor's material. The contractor shall stamp his name on Forms used for receiving his material.

5. All receiving reports written to receive Contractor's materials on local purchases will indicate the same information as listed above under receipt of Honeywell materials and submitted to Honeywell Field Office for signing the same day that materials are received.

6. Two (2) signed copies of the Contractor's receiving report will be submitted to Honeywell Field Office for signing by the close of business the same day that materials arrive at job. All reports are to be in Honeywell Field Office one-half (1/2) hour before closing time. Any materials received after one (1) hour before quitting time will be written up the next morning.

RECEIVING AND INSPECTION REPORT

COPY FOR		LOCATION			R&I NO. P.O. NO.
CARRIER	CAR NO.	DATE RECEIVED	COMPLETE PARTIAL	AUTH. NO.	REQ. NO.
VENDOR NAME & ADDRESS					

ITEM NO.	QUANTITY RECEIVED	DESCRIPTION OF MATERIAL

UNLOADING STARTED - D	TIME	UNLOADING COMPLETED - DATE	TIME
CHARGES PREPAID $	COLLECT	FREIGHT BILL NO.	CONDITION OF SHIPMENT
TECHNICAL INSPECTION			RECEIVED BY
REMARKS:			LOCATION

Honeywell	ENVIRONMENTAL SPECIFICATION			Spec. No. 01620
Revision Number	Date of Revision	Author's Initials	GENERAL REQUIREMENTS SAFETY, HEALTH AND EMERGENCY RESPONSE	Page 1 of 8
6	06/30/06	JKM		

1. GENERAL

1.1. The purpose of this document is Communicate Honeywell's minimum Health, Safety and Emergency Response requirements for performing field activities associated wit all Honeywell remediation related work, including but not limited to, Due Diligence, Remedial Investigations, Feasibility Studies, Remedial Design, Remedial Action, Operation Maintenance & Monitoring, Brownfield's, and other similar or related activities.

1.2. This document is applicable to all remediation work performed in the United States and US territories.

1.3. The Contractor is responsible to ensure that their work is executed in full compliance with all applicable regulatory requirements, whether such requirements are specifically mentioned in this document or not.

1.4. Any disregard for the provisions of the following Health and Safety requirements shall be deemed just and sufficient cause for termination of the Contract Agreement or any Contract without compromise or prejudice to the rights of Honeywell.

1.5. The Contractor shall have a competent person or persons, as required under the Occupational Safety and Health Act (OSHA), to inspect the Work and to supervise the conformance of the Work with the regulations under the Act.

1.6. The Contractor shall provide a Site Health and Safety Officer (SHSO) for all field projects. The SHSO shall be responsible for ensuring the Site Specific Health and Safety Plan (HASP) adequately addresses the hazards and controls associated with site work activities and that all contractor or subcontractor employees comply with all provisions in the HASP. The SHSO may be a multi-duty employee, but should have specific dedicated time to implement a safe work environment for all work activities.

1.6.1. For all heavy construction, Level A/B, or confined space activities the Contractor shall provide at least one full-time dedicated SHSO whose ONLY responsibility is to ensure the health, safety and welfare of all contractor and subcontractor employees participating in the project. This individual shall also be responsible for the daily inspection of all protective structures and devices implemented by the Contractor to ensure the safe, continual and un-interrupted functioning of the ongoing operational activities for the duration of this Contract.

2. REGULATORY AND HONEYWELL SPECIFIC REQUIREMENTS

2.1. The Contractor and its subcontractors shall comply with all applicable federal, state and local laws, ordinances, codes, rules, regulations, policies and governmental interpretations thereof. The Contractor shall be responsible for the health and safety of its workers and subcontracted workers at this Site.

2.2. Contractor, its employees and subcontractors shall comply with all safety rules common to the construction trades and shall abide by all safety standards and practices in use by Honeywell (or Third Party Owner/Operator [TPO/O] if Honeywell is not the property owner/operator). At a minimum, the Contractor shall comply with CD-13-1 *Safety & Occupational Health; Compliance*, CD-13-2 *Contractor's Safety Declaration*, and CD-13-3 *Contractor's Employee Safety Declaration*. Each on-site Contractor employee must sign the Employee Safety Declaration Form CD-13 prior to starting work.

2.3. A Site Kick-Off meeting is mandatory, at which time the selected Contractor shall familiarize itself with Honeywell's (or TPO/O) applicable rules, including those site specific safety and fire protection requirements. Contractor shall comply with Honeywell's (or TPO/O) safety and fire protection rules, as well as any other applicable Federal, State and Local laws or regulations.

2.4. Contractors shall ensure that remediation work performed at active Honeywell (or TPO/O) facilities is coordinated with the management of the facility and that all facility rules and requirements are followed by their employees.

2.5. Prior to commencement of field activities, the Contractor shall certify that personnel employed at, or who later become employed at the Site, who are directly involved with activities that have the potential for exposure to hazardous waste, including direct employees as well as employees of subcontractors, have completed an appropriate 24- or 40-hour health and safety training course in accordance with 29 CFR 1910.120(e) and 29 CFR Part 1926.65(e). Certificates of completion of appropriate 24- or 40-hour training shall be maintained at the Site for all employees engaged in activities with the potential exposure to hazardous waste.

2.6. Prior to the start of demolition activities (if applicable), the Contractor shall conduct an engineering survey of the structure(s) to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where personnel may be exposed shall also be similarly checked. The engineering survey shall be conducted by a competent person, in accordance with 29 CFR 1926, Subpart T. The Contractor shall submit to Honeywell in writing, evidence that such a survey has been performed.

2.7. The Contractor shall prepare a site-specific Health and Safety Plan (HASP) in accordance with Sections 4 and 6 below.

2.8. The Contractor shall be solely responsible for the preparation, implementation and oversight of the HASP. Any review and comments by Honeywell or any third party does not relinquish the Contractor of its responsibility for the health safety and welfare of site personnel under the Contract.

2.9. The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970.

2.10 Except as may by prohibited by local laws, Contractors performing the activities identified below shall comply with Honeywell's Substance Abuse and Prevention Program. (If this provision is prohibited by local laws, the Contractor is responsible for providing Honeywell with evidence of such legal prohibition.). Contractors performing, and those individuals that provide direct supervision (means and methods) of the following work activities shall comply with Honeywell's Substance Abuse and Prevention Policy:

- The use of heavy, construction-type equipment including, but may not be limited to, excavator, cranes of any type, drilling equipment, including geoprobe, compactor, etc.;
- Operations and maintenance at treatment plant-treatment systems facilities;
- Safety sensitive/at-risk work such as, but may not be limited to, confined space entry, lockout/tagout, dredging operations, hot work activities, etc.;
- Other work activities not listed can be assessed on a case-specific basis by the PM of the Alliance/Non-Alliance Firm and/or the certified safety and health professional approving the HASP for such activity to determine applicability to the policy.

2.10.1 The Honeywell Substance Abuse and Prevention Program prohibits the use, manufacture, sale, possession or transfer of illegal drugs, alcohol and controlled substances on Honeywell project premises. Violation of this contract requirement may be considered by Honeywell to be a material breach of contract and subject the Contractor to all remedies available to Honeywell at equity, contract, and law. In addition, Contractor is advised that violation of this contract requirement shall be considered in the evaluation of the Contractor as being qualified to supply personnel under future contracts with Honeywell. Contractor's attention is directed specifically to those articles in the terms of the contract related to drug abuse prevention, indemnity and termination.

2.10.2 Prior to having employees perform work on the site, Contractor shall provide documentation that these employees have undergone and passed a screening test for illegal/unauthorized substances (alcohol, marijuana, cocaine, opiates, amphetamines and phencyclidine) not more than two (2) weeks prior to their initial assignment for work at Honeywell's property. Contractor employees who are in a continuous random drug testing program are not required to comply with the two (2) week prior to initial assignment requirement, except for alcohol testing. Contractor's drug screening program and reporting shall comply and be in accordance with Parts 382 and 40 of the Federal Motor Carrier Safety Regulations, Department of Transportation.

2.10.3 The contractor must insure that breath or specimen and blood sample collection procedures are consistent with Part 40 of the Department of Transportation (DOT) requirements. A Department of Health and Human Services (DHHS) certified laboratory performs (Part 40.39) the screening and the laboratory results are reviewed by a qualified medical review officer (occupational physician). (Part 382.407 and Part 40.29 (g)). Illegal/unauthorized substances tested for and cut off levels shall be consistent with DOT requirements as provided in Part 40.29. Alcohol cut-off levels shall be consistent with parts 382.201 and 382.301.

2.10.4 In addition, to Pre-employment testing, Contractors HASP shall provide for Post-accident (Part 382.203) and Reasonable Suspicion Testing (Part 382.307) if any worker who reports to work appears to be "under the influence" contractor shall be required to screen subject worker "for reasonable suspicion" drug and alcohol testing consistent with DOT requirements. Following an accident or incident, contractor shall be required to screen worker(s) involved in the accident or incident for drug and alcohol testing consistent with DOT requirements. Contractor as part of its HASP shall identify what physical symptoms and actions constitute "under the influence."

3. EMERGENCY PHONE NUMBERS AND ADVERSE EVENT REPORTING

3.1. Emergency phone numbers (Fire, Medical, Police) and a map detailing the route/directions to the nearest hospital shall be conspicuously posted by Contractor at the Site, and all personnel involved with the Work shall be informed of this location.

3.2. Event reporting includes fatalities, catastrophes, injuries, motor vehicle accidents, environmental releases or incursions, fire, explosion, property damage, and near misses. Events must be reported in accordance with Honeywell's adverse event reporting system. Contractors must maintain on site a written investigation report that includes at a minimum all of the information required by the Honeywell Adverse Event Reporting requirements.

4. SUBMITTALS

4.1. The Contractor shall submit to Honeywell prior to commencement of any on-site activities the Contractor prepared HASP (see Section 6) for review and comment. Review and comment of the HASP may also be required by additional parties including regulatory agencies and/or third party owners/operators. These requirements will be identified in the Scope of Work document on a case-by-case basis.

4.2. Certificates of completion of appropriate 24- or 40-hour training shall be maintained at the Site for all employees engaged in activities with the potential exposure to hazardous waste.

4.3. In addition, the Contractor shall submit the following items:

- CD-13-1 - Safety & Occupational Health Compliance
- CD-13-2 - Contractor's Safety Declaration
- CD-13-3 - Contractor's Employee Safety Declaration
- Daily Safety Reports
- Safety Incident Reports (Environmental Excursion, Vehicle and Worker Forms)
- Employee/Visitor Register
- Monitoring/Sampling Results
- Training Logs
- Monthly Man-Hours

5. PREPARATION FOR SITE ACTIVITY

5.1. The Contractor shall be solely responsible for the safety of its employees, subcontractors, suppliers, and other parties at the Work area as a result of the Contractor's direction.

5.2. Determination of the appropriate level(s) of worker safety equipment and procedures shall be made by the Contractor.

5.3. Should any unforeseen or site-specific safety-related factor, hazard, or condition become evident during the performance of Work at the Site, it shall be the Contractor's responsibility to bring such to the attention of Honeywell both verbally and in writing immediately for resolution. At all times, the Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment.

5.4. The Contractor shall be responsible for the safe operation and storage of any equipment used or brought on-site during the Work.

6. HEALTH AND SAFETY PLAN

6.1. The Contractor shall prepare a site-specific Health and Safety Plan (HASP) in accordance with the requirements of 29 CFR 1910.120 and 29 CFR 1926.65, and all other applicable OSHA regulations and published guidelines. This HASP shall cover all personnel who will be employed by the Contractor to perform Work at the Site, including direct employees as well as employees of subcontractors and others as may be required by the Contract Documents. Duplication of the general information contained in the Contractor's Safety and Health Program is unnecessary and shall be incorporated by reference. The level of detail provided in the HASP shall be tailored to the type of work, complexity of operations to be accomplished, and hazards anticipated.

6.2. The Contractor shall be responsible for preparation of a Site-Specific Health and Safety Plan, its implementation, and related requirements as specified herein. This plan shall address at a minimum, but not be limited to, the following components:

6.2.1. Identification of Key Personnel - Identify, by name and by title, the on-site and off- site health and safety personnel responsible for the implementation of health and safety procedures.

6.2.2. Training - Describe health and safety training requirements for all supervisory and on-site personnel. Training requirements shall also include attending an initial Site orientation prior to engaging in any on-site activities. Sign-off sheets acknowledging attendance shall be provided.

6.2.3. Medical Surveillance - Certify that all supervisory and on-site personnel have received appropriate medical examinations and are able to conduct the tasks required for this project. This includes medical examinations required by 29 CFR 1910.120(f) and 29 CFR Part 1926.65(f) , respiratory protection medical evaluations, respirator fit test requirements, and any site specific biological monitoring requirements.

6.2.4. Hazard/Risk Analysis - Identify and provide a means of mitigating all foreseeable chemical and physical hazards associated with the Work.

6.2.5. Work Zones - A Site plan, which depicts the designation of zones including: (1) Exclusion Zones (EZ), (2) Contamination Reduction Zones (CRZ), and (3) Support Zones (SZ). The level of personal protection for each zone shall be specified by the contractor.

6.2.6. Personal Safety Equipment and Protective Clothing - Identify personal safety equipment and protective clothing to be used and available on-site. This shall include identification of expected levels of protection (e.g., B, C, and D) for each task, and the action levels and protocols for determining and implementing personal protective equipment (PPE) upgrades/downgrades.

6.2.7. Emergency Response and Contingency Plan - Identify and provide procedures for emergencies arising during Work activities. A route map and directions to the nearest hospital shall also be included.

6.2.8. Equipment Cleaning - Describe methods and procedures for decontamination of equipment.

6.2.9. Material Safety Data Sheets - Provide Material Safety Data Sheets (MSDSs) for all chemical materials to be brought on, handled, stored and/or otherwise used at the site by the Contractor.

6.2.10. Noise Level - Describe methods and procedures for controlling noise levels, as produced by construction activities, to safe and tolerable limits as set forth by OSHA and any applicable State or local codes or ordinances. All construction activities presenting a potential noise nuisance shall be provided with noise muffling devices.

6.2.11. Dust Management - Describe methods and procedures for managing dust produced by site activities. Describe monitoring methods and action levels to necessitate implementation of dust management measures. The use of any materials other than clean potable water for dust management is prohibited unless approved by Honeywell.

6.2.12. Equipment Maintenance – Contractor HASP shall address specific health and safety considerations associated with the maintenance of all equipment, tools and electrical devices. Contractor shall specify maintenance locations, anticipated work activities and related worker protections, spill response, containment and cleanup, storage of chemical materials, fuels and lubricants, during vehicle maintenance activities.

6.2.13. Fall Protection - The HASP shall address the fall hazards and controls associated with site work activities. Walking/working surfaces (horizontal and vertical surfaces) at remediation construction sites with an unprotected side or edge that is 6 feet (1.8 m) or more above a lower level shall be protected by the use of guard rail systems, safety net systems, or personal fall arrest systems. Contractors shall comply with 29 CFR 1926, Subpart M Fall Protection, or the equivalent state requirements.

6.2.14. Confined Space Entry - The contractor shall identify the presence or absence of confined space entry work activities. If entry into tanks, process equipment, sumps, sewers, manholes, trenches, or other spaces identified as a confined space is identified as a work activity, a confined space entry program must be included in the HASP. The confined space entry program must include requirements for labeling confined spaces, permit requirements, monitoring requirements, PPE, retrieval equipment, training requirements, and emergency response procedures.

6.2.15. Crane Safety - The HASP shall address the hazards and controls associated with crane, hoist, and rigging operations. This includes personnel training/certification, crane equipment inspection, positioning, and operations; general hoist operations; and rigging equipment inspection and use for material handling via cranes and hoists. Critical lift procedures and planning shall be addressed as required. Contractors shall comply with 29 CFR 1926 Subpart N Cranes, Derricks, Hoists, Elevators, and Conveyors, or the equivalent state standards.

6.2.16. Hot Work - The contractor shall include the requirements for a hot work permit system for any welding, burning, open flame, spark-producing or similar activity (for example, abrasive grinders, abrasive saws). The permit should include, as a minimum, fire prevention procedures, PPE, and cylinder safety.

6.2.17. Utility Clearance – The HASP shall address the requirements for buried utility clearance prior to performing work activities. Sources of information to identify buried utilities include use of a utility locator service, plant drawings, locations of sanitary and storm sewers, electrical conduits, water supply lines, natural gas lines, fuel tanks and lines, and facility personnel knowledgeable of utility location. The HASP shall assess the risk from overhead power lines and ensure adequate clearance distance is maintained.

6.2.18. Hazardous Energy Control - This section shall be included in the HASP if work activities have the potential to expose contractor employees to hazardous energy sources. This includes activities related to the installation, maintenance, service, or repair of machines, equipment, processes, or systems or decommissioning and dismantlement. The contractor shall provide trained and authorized employees to conduct lockout/tagout operations. This section shall include a site-specific lockout/tagout procedure. It must identify all machines, equipment, electrical installations, processes, or systems that are included in the procedure.

6.2.19. Excavation - The HASP shall address the hazards and controls associated with excavation activities conducted by contractors at Honeywell project sites. Excavation is defined as any man-made cut, cavity, trench, or depression in an earth surface that is formed by earth removal. Excavation hazards include cave-ins, falls, falling objects, hazardous atmospheres, unstable structures, and excavating into underground utilities. Contractors must comply with 29 CFR Subpart P Excavations, or the equivalent state requirements.

6.2.20. Scaffolds and Ladders - The HASP shall address the hazards and controls associated with the use of scaffolds and ladders to perform work activities at RES project sites. This section would apply to the use of various types of scaffolds including pole, tube and coupler, fabricated frame, horse, ladder jack, outrigger, interior hung, needle beam, suspended, adjustable suspended, and mobile. It also applies to the various types of ladders that may be used to perform work activities including step, extension, and fixed. Hazards that should be addressed in this section include falls to different levels, being struck by falling objects, and exposure to unstable scaffolds and work platforms.

01620 ATTACHMENT 1

CD-13-1
SAFETY & OCCUPATIONAL HEALTH COMPLIANCE

TO: Honeywell Site Superintendent ______________________________.

FROM: Contractor ____.

The employees listed below:

	Name	If Employed by Sub-Contractor List Sub's Name		Name	If Employed by Sub-Contractor List Sub's. Name
1.			11.		
2.			12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

have started to work at the ___________________________ site of Honeywell.

All the Safety rules presented in 01620, and all special safety and occupational health matters pertaining to this project site and its operations have been explained to those contractor employees listed above.

We believe that these employees understand the rules and risks of work at this site and that they fully intend to work safely within the spirit and letter of the documents mentioned above. If we observe any deviations, we will call it to their attention immediately and take any other corrective action, including dismissal, to comply with Honeywell's intention of safe, productive work with minimal occupational risk.

For Contractor:___________________________

Date:___________________________

01620 ATTACHMENT 1

CD-13-2
CONTRACTOR'S SAFETY DECLARATION

TO: Honeywell Site Superintendent ______________________________.

FROM: Contractor's Safety Officer ______________________________.

As the duly authorized and designated representative and agent of ____________________, hereinafter called "Contractor", I hereby certify and agree for myself and for and on behalf of Contractor that:

(1) I have been advised and instructed by the Honeywell Site Superintendent concerning working conditions including hazards, if any, involved in the job and/or job location in which Contractor and Contractor's agents and employees will be working or present;

(2) I have already instructed or will immediately instruct all such agents and employees with respect to such conditions and/or hazards and the proper safety precautions to be observed in regard thereto. I will also see to it that each Contractor employee signs form CD-13-3 5/88 and will submit these weekly for all new employees;

(3) All necessary, adequate and operative protective clothing and equipment have been or will be immediately issued to all such agents and employees, together with full instructions and training for their use;

(4) Procedures including employee clothing and equipment requirements will be put into effect; that all such agents and employees will be properly supervised to insure compliance in the use of protective clothing and equipment and in the strict observance of safety rules and regulations; and

(5) The following items among other items, were specifically covered:

a.) General safety rules and regulations

b.) Special safety and occupational health matters pertaining to this site and its environs.

c.) Compliance with 29 CFR 1910.120.

Date: ____________________

____
Signature of Contractor's Representative for himself and for and on behalf of Contractor

____
Signature of Honeywell employee giving instructions

01620 ATTACHMENT 1

CD-13-3
CONTRACTOR'S EMPLOYEE SAFETY DECLARATION

TO: Honeywell Site Superintendent______________________________.

FROM: Contractor______________________________________.

I have been instructed in detail on and understand the following:

1. The existence and requirements of the OSHA Hazard Communications Standard.

2. The chemical hazards present in the areas where I will be working.

3. The hazards associated with these chemicals.

4. Where the Project Site maintains the written Health and Safety Plan.

5. The list of Material Safety Data Sheets and the location of these sheets.

6. Site Specific Health and Safety Plan

____
Employee Signature

____
Employee Name Printed

____
Contractor Name Printed

Honeywell

01620 ATTACHMENT 2
MOTOR VEHICLE ACCIDENT REPORT

Report #:____________

DATE OF ACCIDENT____________ DAY OF WEEK__________ TIME_________

LOCATION OF ACCIDENT____

ACCIDENT INVOLVED: Employees, contractors, visitors, Vehicle vs. Vehicle, Vehicle vs. Property, Vehicle vs. Pedestrian

---

VEHICLE NO. 1		VEHICLE NO. 2 (or Pedestrian Info.)
	DRIVER'S NAME	
	STREET ADDRESS	
	CITY AND STATE	
	DRIVERS LICENSE NO.	
	PHONE NO. OR EXT.	
	OWNER'S NAME	
	STREET ADDRESS	
	CITY AND STATE	
	PHONE NUMBER	
	VEHICLE TYPE	
	MAKE, MODEL, YEAR	
	LICENSE PLATE	
	VEHICLE DAMAGE	
	PASSENGERS	
	VEHICLE REMOVED TO (auth.)	

INJURED (type, where taken):________________________________

____

POLICE DEPARTMENT/REPORT #:______________________________

WEATHER:____

ROAD CONDITION:____

ESTIMATED SPEED OF VEHICLE 1:____________ VEHICLE 2:____________

VEHICLE DEFECTS RELATING TO ACCIDENTS (Brakes, Lights, Tires, Steering)

VEHICLE 1:____________________ **VEHICLE 2:**____________________

STATEMENT DRIVER VEHICLE 1:____

____

____

____

STATEMENT DRIVER VEHICLE 2:____

____

____

____

INVESTIGATOR'S COMMENTS:____

____

____

____

PHOTOGRAPHS TAKEN?:______

DIAGRAM:

INVESTIGATOR'S SIGNATURE:____________________ **DATE:**____________

SUPERVISOR'S SIGNATURE:____________________ **DATE:**____________

Honeywell

01620 ATTACHMENT 3
TELCON

Reported By: ______________________ Time: __________ Date: __________

☐ Injury	From: ______________ (Location)	Date: __________	
☐ Illness	Date of Injury: ______________	Time: __________	
☐ Incident	Name of Injured: ______________		
	Job Title: ______________		
	Age: ______	Company Service: __________	
	Job Service: ______________		

What Happened:

Result:

OSHA RECORDABLE CODE DEFINITIONS ONLY

CODE	INJURY	CODE	ILLNESSES
01	Fatalities	07A	OCC skin diseases/disorders
02	Lost Worday Cases	07B	Dust disease of lungs
03	Cases w/day from work	07C	Respiratory Condition Due to Toxic Agents
05A	Restricted Duty Cases	07D	Poisoning toxic material
06	Cases w/o lost Workdays	07E	Disorder Due to Physical Agents
		07F	Disorder Associated with Repeated Trauma
		07G	All Other OCC Illness
		08	Fatalities
		09	Lost Workday Cases
		010	Cases w/day from work
		012A	Restricted Duty Cases
		013	Cases w/o lost Workdays

Enter Appropriate Codes From Code Descriptions Above Under OSHA Classification

e.g. Restricted Injury Description 02/5A
Illness Type/ Description 07C/013

Example: To record respiratory lost workday illness case away from work: 07C/09/010.

OSHA CLASSIFICATION:

MONTH TO BE REPORTED:

COMMENTS:

FAX IMMEDIATELY TO:
EMSE Safety (973) 455-2315

Honeywell

01620 ATTACHMENT 4
INCIDENT INVESTIGATION REPORT

Facility:	Area:	Equipment:	Report Number:

Date Of Incident:	Time:	Shift:	Date Incident Reported:	Report Prepared By:

Witnesses:	Other Pertinent Data:

TYPE OF INCIDENT (Check Appropriate Type)

- ☐ 1. Injury
- ☐ 2. Fire Or Explosion
- ☐ 3. Operational Error
- ☐ 4. Potential Hazard (Fire, Injury, etc.)
- ☐ 5. Loss Of Material
- ☐ 6. Equipment Damage
- ☐ 7. Contamination Of Material
- ☐ 8. Release To Clean Water Sewer
- ☐ 9. Release To Process Sewer
- ☐ 10. Release To Atmosphere

COMPLETE THIS SECTION FOR INJURIES

Name Of Injured:	Employee Nbr.:	SS#:	Age:	Company Service:

Job Title:	Job Assignment:	Shift Time:	Job Service:

Extent Of Injuries:	Treatment Provided:

DESCRIPTION OF INCIDENT

Will an in-depth investigation of the incident, based on the serious consequences (actual or potential), be completed, using the causes and corrections guide (EMS-INV2) for analysis?

☐ **YES** ☐ **NO** **CHECK APPROPRIATE ANSWER**

Person Completing Report	Concur Department Head

1. If the answer is <u>NO</u>, this sheet is to be filed in the Department files and a copy forwarded to the Safety Department for review and filing.

2. If the answer is <u>YES</u>, upon completion of the Causes and Corrective Action form, review and approval in writing by both the involved Department Head and Plant Manager prior to distribution is required.

APPROVALS REQUIRED FOR DISTRIBUTION OF CAUSES AND CORRECTIONS GUIDE

Prepared By Name & Date	Department Head & Date	Plant Manager & Date

Incident Date:	Case Number

For each question circle "yes" (Y) or "no" (N). For each yes answer complete the how, cause, and corrective action blocks.

1 - WORKSPACE ENVIRONMENT AND EQUIPMENT

ANALYSIS QUESTIONS	Circle One	HOW?	CAUSE(S) ASK WHY UNTIL A FIXABLE CAUSE IS IDENTIFIED.	RECOMMENDED CORRECTIVE ACTIONS/ PERSON RESPONSIBLE/ TARGET DATE
1.1 Did layout, order, arrangement, or housekeeping of the workspace contribute to the incident?	Y N			
1.2 Were environmental conditions a contributing factor (for example, illumination, noise levels, air contaminant, temperature extremes, ventilation, vibration, radiation)?	Y N			
1.3 Did any defect(s) in tools, equipment, or materials contribute to the incident?	Y N			

1 - WORKSPACE ENVIRONMENT AND EQUIPMENT

ANALYSIS QUESTIONS	Circle One	HOW?	CAUSE(S) ASK WHY UNTIL A FIXABLE CAUSE IS IDENTIFIED.	RECOMMENDED CORRECTIVE ACTIONS/ PERSON RESPONSIBLE/ TARGET DATE
1.4 Did a failure to inspect for unsafe conditions contribute to the incident?	Y N			
1.5 Did incorrect use of tools or equipment contribute to the incident?	Y N			
1.6 Did poor design create a hazard or hinder employee ability for safe & natural operation?	Y N			
1.7 Did a lack of maintenance contribute to incident?	Y N			

2 - PEOPLE				
ANALYSIS QUESTIONS	Circle One	<u>HOW?</u>	CAUSE(S) ASK <u>WHY</u> UNTIL A FIXABLE CAUSE IS IDENTIFIED	RECOMMENDED CORRECTIVE ACTIONS/ PERSON RESPONSIBLE/ TARGET DATE
2.1 Did employee(s) deviate from the accepted procedure or practice?	Y N			
2.2 Did employee(s) temporary mental or physical state contribute to the incident?	Y N			
2.3 Did the absence or misuse of PPE or emergency equipment allow an injury to occur?	Y N			
2.4 Was there a communication failure that contributed to this incident?	Y N			

3 - SAFETY SYSTEMS				
ANALYSIS QUESTIONS	Circle One	HOW?	CAUSE(S) ASK WHY UNTIL A FIXABLE CAUSE IS IDENTIFIED	RECOMMENDED CORRECTIVE ACTIONS/ PERSON RESPONSIBLE/ TARGET DATE
3.1 Was there a failure to detect, anticipate, or report and correct a hazardous situation?	Y N			
3.2 Were deviations to safe, standard, operating procedures allowed to persist?	Y N			
3.3 Was there a failure to assess job requirements for non-routine tasks? (Not applicable to all incidents.)	Y N			
3.4 Was there a failure by any group or individual to define, understand, or fulfill their responsibility?	Y N			

3 - SAFETY SYSTEMS				
ANALYSIS QUESTIONS	Circle One	HOW?	CAUSE(S) ASK WHY UNTIL A FIXABLE CAUSE IS IDENTIFIED	RECOMMENDED CORRECTIVE ACTIONS/ PERSON RESPONSIBLE/ TARGET DATE
3.5 Was there a failure to develop proper written procedures for the task or operation in progress? (SOP, JSHA)	Y N			
3.6 Was there a deficiency in the training system that contributed to this incident?	Y N			
3.7 Were unapproved changes or modifications made to the workspace and/or process that compromised safety?	Y N			

Person(s) Doing Analysis:____________________

Date:____________

Honeywell

01620 ATTACHMENT 5

ENVIRONMENTAL EXCURSION/INCIDENT REPORT FORM

1. **Report No.** ______________ **Excursion** ______________ **Incident** ______________

2. **Facility:** ________________________ **ID#** ________________________________

3. **Start of Excursion/Incident** **Date:** ______________ **Time:** ______________
4. **End of Excursion/Incident** **Date:** ______________ **Time:** ______________
5. **Excursion/Incident became known:** **Date:** ______________ **Time:** ______________

6. **Describe the Occurrence:**

____
____
____
____
____

7. **List parameters released/exceeded, amounts and limits (Specify units of measure).**

Parameter: ______________________ Actual Value: ______________ Limit: ______________
Parameter: ______________________ Actual Value: ______________ Limit: ______________
Parameter: ______________________ Actual Value: ______________ Limit: ______________

8. **Cause of the Excursion/Incident** ____
____
____
____
____

Notifications Made				
9.	**Agency/Group**	**Person Contacted**	**Time/Date**	**Comments**
National				
State				
Honeywell				

10.	**Corrective Actions Taken**
a.	
b.	
c.	

11.	**Planned Corrective Actions**	**Person Responsible**	**Completion Target Date**
a.			
b.			

#	Comments

Prepared by		**Approved By**	
Print Name		**Print Name**	
Date Prepared		**Date Approved**	

Actual Corrective Actions Completed		
#	**Corrective Action**	**Date Completed**

(01620x4/G/p)

Honeywell Inc. World-Wide Excursion/Incident Reporting System

Detailed Instructions for Completing the Honeywell World-Wide Excursion/Incident Form

The Excursion/Incident Report Form is a two-sided form. The front side contains 11 numbered sections within which the required information will be placed. The back side contains:

A. A series of lines which can be used to provide additional information for any numbered section on the front.
B. A signature section for the preparer and the approval by facility management.
C. A section to record the completion of corrective actions to document that all actions committed to have been addressed.

The form is to be completed by the person responsible for environmental quality at the facility, approved by the facility executive and forwarded to the Sector designated contact within 5 working days of when an incident or excursion becomes known.

Section 1. Report Number and Excursion/Incident Classification

Each facility will establish a sequential report numbering system for excursions and incidents. Each report number will start with the year number (i.e. 93) and end with a sequential suffix number to identify each excursion/incident. For example: **93-12**, would denote the twelfth excursion or incident fort the facility in the year 1993. A log should be kept at each location indicating the excursion/incident number and a brief description of the excursion or incident.

Section 2. Facility and Facility ID Number

The city and country of the facility location should be placed in the facility blank. The ID# is the 8 digit code number used for the waste tracking, excursion/incident and action plan tracking systems. If you are unsure of your 8 digit code number, please call your Sector Environmental Quality contact.

Section 3. Start of Excursion/Incident

Blanks are provided for the date and time the excursion/incident started.
For an excursion which becomes known from sampling results such as a wastewater parameter, the start time should be the time of the grab sample or the time the composite sample started.
For any event it represents the best approximation of the beginning of the incident or excursion described in the report.

Section 4. End of Excursion/Incident

Blanks are provided for the date and time the excursion/incident ended.
For an excursion that resulted from a grab sample this section should be blank.
For an excursion that resulted from a composite sample, this area will contain the end of the composite period.
for releases or other events it represents the best approximation of the end of the incident or excursion described in the report.

Section 5. Excursion/Incident Became Known

This is the time and the date when facility personnel were first aware of the excursion or incident.
For a water or air sample result it is the time when the analysis is received from the laboratory or agency.
For an incident involving a complaint, it is the time and date of the complaint.
For releases or other events it is the time and date that the incident or excursion was discovered by facility personnel.

Section 6. Describe the Occurrence

What specifically happened? If there was a release, where did it go? Describe any impacts and community/media response. If more room is required, turn to the back of the form, place a 6 in the number column and continue the description. The cause should be explained in Section 8. Try not to include information which appears in other sections of the form unless it is necessary to describe the event.

Section 7. List parameters Released/Exceeded, amounts and limits

In this section, space is provided for up to three parameters for a single event. The parameter is either the specific chemical involved or the standard exceeded in the case of certain secondary indicators such as biological oxygen demand. If a complaint is involved, the parameter might be "odor" or a more general parameter such as "emissions". In each case where the actual measured or calculated value of the excursion or incident parameter is known, it should be placed in actual value. If there is a regulatory standard for the discharge, spill or emission, record this under "Limit". In each case where numerical values are used be sure to specify units such as milligrams per liter (mg/L) or kilograms (Kg).

Section 8. Cause of the Excursion/Incident

In order to facilitate continuous improvement, it is necessary to thoroughly understand why an excursion or incident took place. The person responsible should investigate the circumstances surrounding the excursion or incident and report root causes if possible. Each cause detailed should be supplied with corresponding corrective action in Section 10 or 11.

Section 9. Notifications Made

Each facility is expected to have an emergency action plan, spill plan and contingency plan which contains up-to-date information on external and internal notifications necessary for any event. This form is to record that those notifications were made, the person spoken or written to, the time and date of the notification and a small comment area. Comments are expected to be items like, "Follow up with letter", "Phone not answered", "call back", Letter mailed", etc. Space is provided for two contacts at each level of government and Honeywell. If more space is required continue on the back of the form.

Section 10. Corrective Actions Taken

This area allows the environmental quality person to note up to three corrective actions which have been made following the excursion or incident. These may be actions related to recovery, clean-up, immediate retraining, immediate equipment repair and like items. If additional space is required continue on the back of the form.

Section 11. Planned Corrective Action

This area provides space for the environmental quality person to note p to three corrective measures which are yet to be accomplished. These may be retraining, new or modified equipment, or new programs. Using this area is a commitment on behalf of the facility to accomplish the corrective action. A person responsible and a target date for completion is required for each entry in this section. Each facility should have a system to track and assure completion of each item committed to in this section. To facilitate the documentation of completing action items, a section is provided on the back of the form to record the completion of specific actions.

Signature Section

The report will be signed and dated by the person responsible for environmental quality at the location. The report must then be subsequently signed by the location executive as an acknowledgment that the information about the incident or excursion has been conveyed to the executive and that the executive agrees to fund and facilitate the required future corrective actions. Please print or type the person's name under the signature for ease of identification.

Actual Corrective Actions Completed

After a copy of the Excursion/Incident Report has been sent to the Sector contact, longer term corrective actions will take place. The completion of these actions should be documented in this section. The document should remain active at the facility until all committed actions are documented as completed.

Honeywell

01620 ATTACHMENT 6
HONEYWELL CONTRACTOR
NEAR MISS/INCIDENT INVESTIGATION REPORT*

*** To be completed by the Contractor Company with assistance from Honeywell personnel**

Date Incident Reported:	Honeywell Location:	Honeywell Contact:

Date of Incident:	Time of Incident:	Name of Contractor Company:

Name of Individual(s) Involved w/Incident:	Name of Injured Worker (if applicable):	Name of Supervisor/Foreman:
If an Individual was Injured, were they working under the direct supervision of Honeywell?	Age of Individual Involved:	Job Classification/Title/Craft:
Length of Work Experience at Job Classification:	Length of Employment with Company:	Length of Time Working at Site:
Was the Individual Involved with the Incident Performing their Regular Job? If "No", explain why:	Date of Site Safety Orientation:	Last Formal/Documented Safety Meeting Attended:

Hours Worked that Day/shift Prior to the Incident:	Hours Worked that Week Prior to the Incident:	Consecutive Days/Shifts Worked Prior to the Incident:	Last Day Off Prior to the Incident:

Description of incident according to the individual(s) involved or injured (including what happened and how the incident occurred):

According to the individual(s) involved with the incident or injured, what could have been done differently to prevent this incident from occurring?

Why weren't these done prior to the incident?

Describe any First Aid or Medical Treatment Provided On Site and/or at a Medical Facility. **NOTE: Any follow-up treatment at a later date must be communicated to Honeywell (Contractor Safety Leader).**

Date that the Injured Individual Returned to Work?	Any Work Restrictions or Lost Time? If "Yes", describe: **NOTE: Any work restrictions or lost time at a later date must be communicated to Honeywell (Contractor Safety Leader).**

Was there any Property Damage? If "Yes", describe:

Contractor Supervisor/Foreman should complete the information below with an Investigation Team

Team Investigation – List the Possible Causes of the Incident Below.

For Each Possible Cause Listed Above, Reply "Why" or "Why not" the Cause Occurred.

Corrective Action(s) Taken - List Person(s) Responsible and Target Date:

Contractor Investigation Team - Leader & Members:

Approval (Individual Involved/Injured):	Title:	Date:
Supervisor Approval (Print Name):	Title:	Date:
Honeywell Site Approval (Print Name):	Title:	Date:

Honeywell

01620 ATTACHMENT 7
Contractor Exposure Hours

Instructions: This form is used to report monthly contractor exposure hours that are worked at a Honeywell location. Definitions and the different types of contractor activities that should or should not be reported are discussed below.

Definitions:

Contractor = non-Honeywell individual(s) that provide independent contract labor services, either by direct purchase order, blanket purchase order, contract or other agreement. This labor service typically includes, but is not limited to, capital improvement projects, minor renovations, equipment installation, service, maintenance or repair activities.

Independent Contract Labor = individual(s) working on-site that have the means, methods and processes by which the work objective is accomplished, directly supervised by the contractor company.

Categories of "Contractor Hours and Injuries" that should be reported

Capital = **individuals associated with a specific construction or remediation project [work requiring an Appropriation Request (AR)] that has a dedicated Honeywell Project Manager or Engineer.**

General *= individuals working on an as-needed basis, usually more than four (4) hours/day and a couple of times per month (e.g. fire or security alarm personnel, office or equipment repairs, etc.)*

Resident = individuals working on a regular or temporary permanent basis (e.g. outsourcing) related to site/plant operations including, but not limited to; administration/clerical, cleaning services, consultants, food service, mail delivery, maintenance and repair activities, security guards, technical/laboratory, etc.

Work hours and injuries that are NOT considered a "Contractor"

Temps = agency personnel working under the direct supervision of Honeywell. These individuals are not considered independent contractors and should have their work-related hours and injuries reported as "Honeywell", for the purpose of calculating Honeywell incident rates.

Delivery = individuals briefly coming onto Honeywell property for the drop-off of materials (e.g. FedEx, UPS, common carriers, vending machines, etc.). **NOTE:** Although work hours are not captured, procedures should be in place to address the potential hazard of chemical deliveries by tanker trucks (e.g. nitrogen, oxygen, etc.)

Visitors = individuals coming onto Honeywell property for non-labor related activities, usually on an one-time basis (e.g. meetings, inspections, plant tours)

Contractor Classification	Contractor/Subcontractor Name	Work Hours

Reporting Month		Total Hours	0

Reporting Location	Honeywell Project # Other Project # (if any)	Contact	

Safety Performance

Were there any incidents during the month (e.g. near misses, property damage, first aid or medical treatment cases, lost time injuries, fatalities)? No Yes If "Yes", the contractor must complete a Contractor Incident Investigation Report.

All incidents must be reported immediately to Andy Soos (732-537-3569 or cell 908-81-8756) or Barbara Koptcho (973-455-6755l. Completed investigation reports and monthly exposure hours can be forwarded via fax (973)455-3082 or e-mail (andy.soos@parsons.com).

SECTION 02100

CLEARING AND GRUBBING

PART 1 - GENERAL

1.01 DESCRIPTION

Remove debris, stumps, roots, and other objectionable materials within the excavation limits designated on the Drawings. Chip the above-grade portions of trees and brush for erosion control measures. Remove stumps and place with debris for off-site disposal in accordance with Section 02219.

A. Work Included in this Section. Principal items are:
1. Selective removal to project limits shown on the Drawings.
2. Protection and preservation of trees and vegetation outside the clearing limits.
3. Cutting and onsite use/disposal of above-grade timber, if any.
4. Onsite disposal of debris, stumps, roots and other objectionable materials.

B. Related Work Specified in Other Sections.
1. Section 02219 - Material Excavation, Consolidation, and Disposal
2. Section 02222 – Excavation
3. Section 02370 - Erosion Control

1.02 CODE REQUIREMENTS AND ENVIRONMENTAL SAFEGUARDS

Accomplish disposal of material removed from site in accordance with applicable Federal, State, and local regulations. Comply with regulations to prevent pollution of air and water.

1.03 SITE INVESTIGATIONS

Carefully examine the site to determine the full extent, nature and location of work required to conform with the Drawings and Specifications. Bring any inaccuracies or discrepancies between the Drawings and Specifications to the Engineer's attention in order to clarify the exact nature of the Work to be performed.

PART 2 - PRODUCTS. (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 CLEARING AND GRUBBING.

A. Remove all vegetation, including, but not limited to, brush, shrubs, stumps, logs, roots, debris, and boulders within the Project area. Backfill holes resulting from the removal of underground structures and roots that extend below finished grade with unclassified fill or backfill.

B. Immediately restore or replace any damaged items.

C. Above-Grade Material: Cut above-grade timber within 12 inches of grade. Chip and dispose of above-grade timber onsite as erosion control measures, as needed.

D. Below-Grade Material: Roots, stumps and other below grade materials will remain in place barring any impact to the intent of the design drawings or documents. No below grade materials will be removed without prior notification and approval of the engineer.

E. Provide a chipper and/or grinder of sufficient size to handle material expected from the cleared and grubbed areas.

F. Do not burn onsite.

3.02 TOPSOIL REMOVAL

None required. Topsoil within the excavation limits is generally contaminated and must be handled in accordance with Section 02219-Material Excavation, Consolidation, and Disposal.

3.03 GUARANTEE

A. Guarantee that Work performed under this Section will not permanently damage trees, shrubs, turf, or plants designated to remain, or other adjacent work or facilities. If damage resulting from operations appears during a period up to 12 months after completion of the project, replace damaged items.

END OF SECTION 02100

SECTION 02140

CONSTRUCTION WATER MANAGEMENT

PART 1 GENERAL

1.1 WORK INCLUDED

A. Development of acceptable Construction Water management procedures detailing the handling, storage, treatment (if necessary), and disposal of all construction water and associated residual sediments generated during construction in accordance with all applicable local, State, and Federal regulations.

B. The Subcontractor is to obtain (if necessary) and operate within all required local, State, and Federal Permits and requirements required to implement the proposed Construction Water Management plan. Any and all civil, criminal, and monetary penalties associated with non-compliance in any regard shall be the responsibility of the Subcontractor.

C. Provide all labor, materials, and equipment required for handling, storage, treatment, and disposal of construction water in accordance with the Engineer-approved Construction Water Management procedures.

D. Perform all specified and necessary sampling and analyses to insure compliance with required permits and applicable laws and regulations or as directed by Engineer.

1.2 RELATED SECTIONS

A. Section 01010 – Summary of Work
B. Section 02219 – Waste Excavation, Consolidation, and Disposal
C. Section 02222 – Excavation
D. Section 02370 – Erosion Control

1.3 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. The Subcontractor shall comply with applicable federal, state and local applicable codes, ordinances, regulations, statues and standards.

B. Shop drawings and test results used in design of the method of handling construction water.

1.4 DEFINITIONS

A. Construction Water: Construction water shall be defined as the following:

1. Surface water which does not flow freely from existing water bodies after diversion of flow away from these water bodies, and until completion of the work.

2. Ground water or surface water entering excavations or trenches.

3. Liquids generated during decontamination activities.

4. Surface water resulting from precipitation during construction which has come in contact with potentially contaminated soils, sediments, fill, or debris, except from potentially contaminated soil, sediment, fill, or debris which is in place and undisturbed.

5. Water or other liquids, which have come into contact with potentially exposed contaminated soils, sediments, or debris, in addition to that resulting from precipitation. This includes any water collected from the inboard fill area.

6. Water collected from soils, sediments, or debris related to dewatering activities.

7. Water collected as a result of the development of monitoring wells and/or piezometers.

8. Water or liquids that have collected in the approved material consolidation area due to decanting or precipitation.

B. Construction Water does not include water incident upon non-disturbed excavation areas. This water shall be diverted from the excavation area as required to minimize the potential for contact with the construction operations.

PART 2 PRODUCTS

2.1 GENERAL

A. Construction Water Management Procedures

1. The Subcontractor shall submit Construction Water Management procedures for the Engineer's approval. The procedures shall include, but not be limited to, the proposed method of handling, sampling, analyses, storage (if necessary), treatment, and disposal of construction water generated during construction. Methods of minimizing the generation of construction water shall be identified.

2. The acceptable methods of handling construction water are limited to collection and:

   a. Discharge to the existing water treatment plant after appropriate pre-treatment.
   b. Off-site disposal at a permitted treatment facility.

3. The acceptable methods of handling soils and sediments generated by the Subcontractor's management of construction water are limited to: -

a. Collection, dewatering and on-site treatment of soils and sediments.
b. Collection, analytical testing, transport, and disposal in accordance with all applicable local, State and Federal regulations.

4. Appropriate pre-treatment prior to on-site discharging to the existing wastewater treatment plant shall result in effluent water quality at levels less than the applicable effluent limits presented in Schedule B. (Equalization Tank Specification Groundwater Constituent Concentrations).

B. Facilities

1. The Subcontractor shall provide methods, means, and facilities required to manage construction water and residuals generated during construction water management.

C. Equipment

1. The Subcontractor shall provide equipment and trained/ OSHA certified personnel to manage construction water.

PART 3 EXECUTION

3.1 GENERAL

A. Subcontractor shall be responsible for estimating the quantity and quality of construction water expected for this project based on the existing site conditions.

B. It shall be the responsibility of the Subcontractor to investigate and comply with all applicable Federal, State, and local laws and regulations governing the handling, storage and disposal of construction water. All construction water shall be disposed of in a manner which meets applicable permit requirements, laws, and regulations.

C. The Subcontractor shall obtain all required permits, manifests, and approvals required for the handling, storage, transport, treatment and disposal of construction water and residuals generated during construction water management.

D. Any sampling and analyses necessary to protect the health and welfare of the Subcontractor's employees and/or agents and/or to characterize collected water, treated water, or residuals shall remain the sole responsibility of the Subcontractor.

E. Construction water shall be handled using equipment compatible with anticipated contaminants which may be present.

3.2 ON-SITE DISCHARGE

A. No construction water shall be discharged on-site.

B. The Willis Avenue WWTP facility will be operated to continuously treat construction water. Treated waters shall be tested weekly to demonstrate compliance with Attachment B.

C. Testing required for discharge to the onsite water treatment plant shall be the responsibility of the Subcontractor.

3.3 OFF-SITE DISPOSAL OF WASTES

A. Subcontractor shall characterize construction water related wastes and any settled solids or other residuals as necessary for off-site disposal.

B. No Subcontractor proposed facility for off-site disposal shall be utilized without prior approval by Client. For all wastes disposed of off-site, Subcontractor is responsible for characterization of such material and arranging for proper temporary storage in accordance with all applicable Federal, State and local regulations at no additional cost to Client.

C. Subcontractor shall dispose of wastes designated for off-site disposal within 90 days of filling the container.

D. Subcontractor shall mark, label, placard, package and manifest wastes in accordance with applicable codes, regulations, and statues.

3.4 MINIMIZATION OF CONSTRUCTION WATER

A. The Subcontractor shall make every effort to minimize the generation of construction water and associated sediments and sludges. Methods to minimize generation of construction water include, but are not limited to:

1. Erection of temporary berms.

2. Use of low permeability tarpaulin or suitable means to cover exposed contaminated areas and materials.

3. Use of 6-inches of Ordinary Borrow soil (low permeability clay) as daily cover to cover exposed contaminated areas and materials.

4. Installation of 6-inch interim soil cover on a temporary basis in areas to be capped.

5. Limiting the amount of exposed contaminated areas.

6. Grading to control run-on and run-off.

7. Engineering controls on construction activities to minimize contact of personnel and equipment with contaminated areas thus minimizing the amount of decontamination required and other appropriate methods.

END OF SECTION 02140

Honeywell International, Inc. Equalization Tank Specification Groundwater Constituent Concentrations
Section 02140 Attachment B

Parameter	Influent Concentration (mg/L)
Total Suspended Solids (TSS)	100
Total Dissolved Solids (TDS)	47,000
Chemical Oxygen Demand	970
Ammonia (as N)	11
Aluminum, Total	0.67
Arsenic, Total	0.03
Beryllium, Total	<0.05
Cadmium, Total	<0.05
Chloride	18,000
Chromium, Total	0.02
Copper, Total	<0.05
Iron, Total	4.05
Lead, Total	<0.02
Mercury, Total	0.0038
Nickel, Total	0.01
Phosphorus, Total, as P	<0.1
Selenium, Total	<0.02
Silver, Total	<0.05
Thallium, Total	<0.05
Vanadium, Total	<0.1
Zinc, Total	0.5
Cyanide, Free	<0.01
Parameter	**Influent Concentration (µg/L)**
Benzene	28,082
Chlorobenzene	135,563
1,2-Dichlorobenzene	40,669
1,3-Dichlorobenzene	580
1,4-Dichlorobenzene	95,862
1,2,4-Trichlorobenzene	64
Toluene	630
Xylenes, Total	329
Fluorene	
Naphthalene	968
Phenanthrene	
Phenol	831
Pyrene	
Phenols, Total Unchlorinated	
Phenols, Total Chlorinated	
2-Chlorophenol	
2,4-Dichlorophenol	
2,4,5-Trichlorophenol	
2,4,6-Trichlorophenol	
2-Methylphenol	
3-Methylphenol	
Acenapthene	
Anthracene	

Notes: (1) --Indicates that the laboratory analysis for a particular parameter was non-detect. However, elevated detection limits were necessary for certain organic compounds, due to very high concentrations of chlorobenzene, etc.

SECTION 02219

MATERIAL EXCAVATION, CONSOLIDATION, AND DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work specified in this section consists of the labor, equipment, tools, materials, and services needed to perform the excavation, relocation, consolidation, and disposal of waste (i.e. sediments, soils, waste and debris) as described herein, shown on the Contract Drawings, or directed by the Engineer

B. Related Sections:
   1. Section 02100 - Clearing and Grubbing
   2. Section 02222 - Excavation
   3. Section 02223 - Backfilling
   4. Section 02370 - Erosion Control
   5. Section 02990 - Finish Grading, Topsoil, and Seeding

1.02 SUBMITTALS

A. Name, location and a copy of the operating permit for offsite disposal facilities to be utilized. A Statement of acceptability is required from disposal facilities for each waste to be received.

B. Procedures, materials, and equipment to be used for the excavation, relocation, transportation, consolidation, and disposal of waste materials including demolition debris. Include a spill contingency plan as part of this submittal. Do not begin waste excavation work until the Engineer has approved this submittal.

C. Submit as part of the Health and Safety Plan (HASP), a contingency plan in the event hazardous materials (i.e. drums, etc.) are encountered during excavation.

D. Shop drawings for the decontamination pad and any temporary soil stockpile areas.

1.03 REFERENCES

A. United States Environmental Protection Agency (USEPA) 9095 – Paint Filter Test

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 GENERAL

A. Establish exclusion zones for work areas in accordance with the Project Safety Plan (PSP).

B. Excavate to the lines and grades shown on the Contract Drawings. Do not over-excavate any area without prior approval from the Engineer.

C. Keep varying contaminant types and concentrations segregated as necessary for disposal.

D. Where required, the Engineer will perform confirmatory or post-construction sampling to evaluate the extent of excavations.

E. Perform excavation in a manner that prevents migration of contaminants to clean areas. Remove and dispose of contamination that spreads beyond the existing contamination limits in accordance with this section.

F. Conduct excavation operations to provide continuous drainage and prevent ponding. Direct surface water away from excavation areas. Remove and handle surface water and groundwater seepage that collect in disturbed excavation areas known to contain contaminated material in accordance with Section 02140.

G. Lake based excavation areas must be encircled with silt curtains to reduce sediment migration. Provide oil absorbent pads and/or booms to contain and collect oil sheens emanating from these excavation areas.

H. Transport excavated materials in accordance with Federal, State and Local requirements and in a manner that prevents spills and the spread of contamination. Provide lined or sealed trucks to prevent spillage of liquids or amend the waste to eliminate free liquids prior to transportation (in accordance with USEPA 9095-Paint Filter Test).

I. Construct decontamination pads to clean trucks moving between contaminated and non-contaminated areas.

J. Weigh materials to be disposed offsite at a local offsite truck scale, onsite temporary truck scale or with truck axle gauges. Do not exceed legal load limits for truck weight.

K. Compact relocated waste in accordance with the contract drawings.

L. Debris: Dispose of debris from the waste areas with the waste unless specifically instructed otherwise by the engineer.

M. Stabilization: Demonstrate that any proposed stabilization methods do not cause an increase in waste volume of more than 10%. Do not use absorbents.

N. Stop work immediately and notify the Engineer if hazardous materials (i.e. drums, etc.) are encountered during waste relocation. Do not proceed with removal of hazardous materials without prior approval from the Engineer unless an emergency situation requiring immediate action exists.

O. Decontaminate equipment used for excavation of waste materials prior to reuse on clean material. Build decon pads to decontaminate equipment or vehicles moving between distinct areas of contamination regardless of the type of contamination. Decon pads must capture all water used in the decontamination process. Dispose of decon water in accordance with Section 02140- Construction Water Management.

P. Manage excavated material on site to dewater sufficiently prior to transportation.

Q. Provide documentation of quantities transported daily from each truck with Bills of Lading.

3.02 DISPOSAL

A. Refer to the Contract Drawings for disposal or treatment instructions for each waste area.

B. Offsite Disposal: Refer to Section 01100-Remediation Construction Requirements.

C. Soil Storage Area shall be constructed at Willis Avenue site, adjacent to the existing stockpile, and shall be large enough to accommodate all materials excavated from the project. The Soil Storage Area shall consist of a liner, constructed of 40-mil HPDE geomembrane, sloped to contain any collected water and with the edges buried in a 1-foot-deep anchor trench.

D. At the close of the project or end of contaminated sediment hauling, the existing stockpile area and the newly constructed Soil Storage Area will be covered with a 12" layer of topsoil and seeded in accordance with Section 02990-Finish Grading.

E. Vehicle and equipment traffic on the Soil Storage Area liner is prohibited. A minimum 1-foot-thick layer of soil shall be spread on the liner prior to traffic. Haul trucks or construction equipment that has driven directly on waste will require decontamination before leaving the stockpile area.

3.03 BACKFILLING

A. Backfill excavation areas as shown on the Contract Drawings, specified, or directed by the Engineer.

B. Backfill in accordance with Section 02223-Backfilling.

END OF SECTION 02219

SECTION 02222

EXCAVATION

PART 1 - GENERAL

1.01 DESCRIPTION

The work specified in this section consists of the labor, equipment, tools, materials, and services needed to perform all excavation as described herein or shown on the Contract Drawings.

A. Work included in this section:
   1. Excavation of soils materials.
   2. Excavation for drainage ditches, swales, culverts, piping, trenches etc.
   3. Excavation for site structures.

B. Related work specified in other sections:
   1. Section 02100 - Clearing and Grubbing
   2. Section 02219 - Material Excavation, Consolidation, and Disposal
   3. Section 02223 - Backfilling
   4. Section 02370 - Erosion Control
   5. Section 02990 - Finish Grading, Topsoil, and Seeding

1.02 QUALITY ASSURANCE

A. Field Measurements

Subcontractor shall verify that survey benchmark, monuments and intended elevations for the work are as shown on the Contract Drawings or as provided by the Engineer.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum. Review subsurface investigation reports and other available site information.

B. Protect plants, lawns, wetlands, and other features that have been designated on the Contract Drawings to remain.

C. Protect control points, bench marks, existing structures, features, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic. Repair or replace damaged items.

D. Prior to the start of construction, notify the appropriate organizations, and have staked or marked underground utilities. Utilities include, but are not limited to water, gas, electric, telephone, cable, storm sewer, sanitary sewers, laterals, and services. If utility locations indicate a possible interference, or points of connection to existing facilities need to be identified, perform exploratory excavations to determine the utilities' location and elevation. Provide the utility owner with results from exploratory excavations for review. Allow the Engineer sufficient time to review exploratory excavation results and evaluate if changes are required to the design prior to start of construction.

E. Maintain existing manholes, catch basins, and other utility structures above and below grade in their pre-work condition. Promptly remove any material or debris entering same due to the operation.

F. Grade areas to receive compacted fill to prevent surface water runoff and ponding.

G. Access to the construction area, from both the land and the water, should be limited. Utilize construction fencing around open excavations both during work hours and non-working hours.

3.02 CLASSIFICATION OF EXCAVATED MATERIAL

A. Classifications of excavated materials are as follows:
   1. Common Excavation - Excavation except "rock excavation." Unconsolidated and non-indurated material, rippable rock, loose rock, soft mineral matter, weathered rock or saprolite, and soft or friable shale which is removable with normal earth excavation equipment. Boulders and detached pieces of solid rock, concrete, or masonry less than 1 cubic yard in volume.

   2. Rock Excavation - Sound solid masses, layers and ledges of consolidated and indurated rock or mineral matter of such hardness, durability and/or texture that it is not rippable or cannot be excavated with normal earth excavation equipment. Rock excavation is not anticipated at this site.

3.03 EXCAVATION

A. Protect adjacent structures that may be damaged by excavation work, including but not limited to utilities, monitoring wells and pipe chases. Repair or replace any structure damaged as a result of operations.

B. Excavate subsoil required to accommodate access roads, construction operations, culverts, ditching, site structures and piping.

C. Shore or machine-slope banks to an angle that is safe for the material in which the excavation is made.

D. Excavations shall not interfere with the normal 45-degree bearing splay of foundations. Do not undercut excavation faces.

E. Grade the excavation perimeter to prevent surface water drainage into the excavation.

F. Remove lumped subsoil, boulders, and rock under 1 cubic yard in size.

G. Notify the Engineer of unexpected subsurface conditions, or of questionable soils encountered at required subgrade elevations, and discontinue work in the area until notified to resume work.

H. Furnish and place structural backfill or unclassified backfill (material type dependent on the nature of work) in sufficient quantities to reestablish the designated subgrade surface if the excavation is carried below the designated subgrade. Refer to Section 02223 - Backfilling for backfill materials. Spread and compact granular material used for backfilling in conformance with the requirements on the drawings.

I. Stockpile and cover excavated material in areas designated by the Engineer.

J. Install sheeting and bracing and use mobile shields in accordance with details of applicable codes, rules and regulations including applicable local, State and Federal regulations including the Occupational Safety and Health Administration (OSHA).

3.04 TRENCH EXCAVATION

A. Excavate and maintain trenches for underground drainage, utilities, piping as shown on the Drawings. Hold trench widths within the minimum and maximum limits shown on the Drawings. If a prefabricated, mobile shield is utilized in lieu of conventional sheeting and bracing in pipe trenches, maintain the bottom of the shield as high as possible (preferably above the spring line of the pipe) to prevent disturbance of the pipe foundation material and to avoid forces which tend to pull pipe joints apart when the shield is dragged forward. Fill gouged openings or troughs left by the shield with additional pipe foundation material and thoroughly compact. Install sheeting and bracing and use mobile shields in accordance with details of applicable codes, rules and regulations including applicable local, State and Federal regulations including the Occupational Safety and Health Administration (OSHA).

B. Excavate flat bottom trenches, of allowable width, at the required subgrade elevation for subsequent installation of pipe foundation material.

C. If indicated on the Drawings or required by unsuitable soil conditions, carry trench excavations below the required subgrade and install a special pipe foundation in conformance with the Contract Documents.

D. Trim back or remove bedrock, boulders and cobbles greater than 6 inches in on each side of the trench so no rock protrudes within 6 inches of the installed pipe. Trim back rock across the bottom of the trench so no rock, boulder, or cobble protrudes within 4 inches of the installed pipe.

E. In general, do not open trenches more than 50 feet in advance of installed pipe. Complete excavation of the trench at least 5 feet in advance of pipe laying operations. Do not leave more than 40 feet of trench open overnight. Utilize construction fencing around any excavation left overnight.

F. Ensure that subgrade is stable for worker access.

3.05 DISPOSAL OF MATERIAL

A. Classify excavated material as surplus material and dispose of at an onsite location approved by the Engineer.

B. Excavated material to be used as onsite fill shall conform with Section 02223 - Backfilling and be approved by the Engineer.

C. Dispose of waste or contaminated materials as specified in Section 02219 - Materials Excavation, Consolidation, and Disposal. Classify materials based on site drawings, visual observations and material testing.

D. Approximately 2 weeks prior to start of trench excavation, excavate test pits, to a depth equal to the bottom of the design trench, and provide composite soil samples to the Engineer. After soil samples are obtained, backfill test pits with excavated composite material.

3.06 FIELD QUALITY CONTROL

A. Perform field inspections.

B. Provide for visual inspection of bearing surfaces.

3.07 PROTECTION OF EXCAVATIONS

A. Prevent cave-ins or loose soil from falling into excavation.

B. Properly and legally maintain excavations while they are open and exposed. Install and maintain sufficient and suitable barricades, warning lights, flood lights, signs, etc., to protect life and property until the excavation has been backfilled and graded to a safe and satisfactory condition.

C. Protect the bottom of excavations and soil adjacent to, and beneath, foundations from freezing.

D. Exposed subgrade surfaces shall remain undisturbed, drained, and maintained as uniform areas shaped to receive the foundation components of the structure.

E. Make excavations in accordance with the Subcontractor's Safety Plan

END OF SECTION 02222

SECTION 02223

BACKFILLING

PART 1 - GENERAL

1.01 DESCRIPTION

The work specified in this section consists of the labor, equipment, tools, materials, and services needed to perform backfilling as described herein or shown on the Contract Drawings.

A. Work included in this section:
   1. Analytical/geotechnical testing of imported backfill materials prior to placement and compaction.
   2. Site filling and backfilling.
   3. Classification of materials.

B. Related sections:
   1. Section 02219 - Material Excavation, Consolidation, and Disposal
   2. Section 02222 - Excavation

1.02 SUBMITTALS

A. Required test results for each material proposed. The name and owner of the borrow source. Materials must be approved by the Engineer prior to use.

B. Submit field QC results, including soundings and compaction tests.

C. All chemical and geotechnical testing data.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   2. ASTM D422 - Standard Test Method for Particle-Size Analysis of Soils.

B. Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW)
   1. EPA Method 6010B – Inductively Coupled Plasma-Atomic Emission Spectometry.
   2. EPA Method 7471A - Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique).
   3. EPA Method 7841 – Thallium (Atomic Absorption, Furnace Technique).
   4. EPA Method 8082 – Polychlorinated Biphenyls (PCBs) by Gas Chromatography.
   5. EPA Method 8260B – Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
   6. EPA Method 8270C – Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).

C. New York State Department of Transportation (NYSDOT)

1. NYSDOT Specification 304 Option D and Section 204.

1.04 QUALITY ASSURANCE

A. The Owner and the Engineer reserve the right to inspect proposed sources of offsite materials and to order tests of the materials to ascertain its quality, particle size, and compaction characteristics. Engage an approved testing laboratory to perform such tests, and submit certified test results.

B. Do not use materials until approval is obtained from the Engineer. Use material from approved sources.

PART 2 - PRODUCTS

2.01 OFF SITE MATERIALS

A. Natural material from approved off site sources, free from trash, debris, deleterious materials, snow, or ice.

B. Material free of hazardous wastes or hazardous substances.

PART 3 - EXECUTION

3.01 GENERAL BACKFILLING REQUIREMENTS

A. Verify that fill materials are acceptable.

B. Verify subsurface installations for the project have been inspected and are ready for backfilling. Ensure that subgrade is stable for worker access.

C. Inspect areas to be backfilled prior to backfilling operations. Remove unsuitable materials, including sheeting, bracing, forms and debris. Remove water, snow, ice, and debris from surfaces to accept backfill material. Do not place backfill against foundation walls of structural members unless they are properly shored and braced or of sufficient strength to withstand lateral soil pressures.

D. Backfill areas to required contours, grades, and elevations.

E. Remove surplus backfill materials from site and/or place in an accepted area.

3.02 TESTING

A. Perform Particle Size Testing - ASTM D-422 to ensure aggregate gradation requirements.

B. If tests indicate the Work does not meet the specified requirements, remove, replace, and retest the work.

C. Borrow Source and Quality Control Testing

1. Conduct borrow source testing of proposed backfill and quality control testing as follows:

Material Property	Test Method	Frequency
Particle Size Analysis	ASTM D-422	1 sample/2,500 cy
Soil pH	ASTM D-4972	1 sample/2,500 cy
Organic Content	ASTM D-2974	1 sample/2,500 cy

3. Submit testing results to the Engineer for approval prior to placement. If backfill is placed prior to approval and the results show a failure, the backfill must be removed and replaced at the Subcontractor's expense.

END OF SECTION 02223

SECTION 02370

EROSION CONTROL

PART - GENERAL

1.01 DESCRIPTION

The work specified in this section consists of the labor, equipment, tools, materials, and services needed to accomplish erosion control measures during and following construction as described herein, shown on the Contract Drawings.

A. Work included in this section:

1. Coordinating with the Engineer to meet Agency requests regarding erosion and sedimentation control.
2. Installation of temporary and permanent sedimentation and erosion control measures.
3. Controlling erosion from stockpiles.
4. Inspection of erosion control measures during and after significant rainfall.
5. Repairing failed sedimentation and erosion control measures.
6. Removing and disposing of sediment deposits in a manner that does not result in additional erosion or pollution.
7. Removal of temporary erosion control measures once construction and permanent stabilization is complete.

B. Related Sections:

1. Section 02219 Material Excavation, Consolidation, and Disposal
2. Section 02222 – Excavation
3. Section 02223 – Backfilling
4. Section 02228 - Compaction
5. Section 02990 - Finish Grading, Topsoil and Seeding

1.02 PERFORMANCE REQUIREMENTS

A. Observe government policy established by United States Environmental Protection Agency (USEPA).

B. Conform to all erosion and sedimentation control measures established by the State of New York.

C. Temporary erosion and sediment control measures shall be installed as one of the first steps in construction, shall be maintained throughout the construction period, and shall not be removed until permanent cover is completely established and stabilized, with Engineer's approval.

1.03 SCHEDULE

A. Taking into account specific constraints or other criteria outlined herein, the Subcontractor shall prepare and incorporate a schedule, which sets forth his program of operations to effectively control erosion and sediment runoff, into the overall construction schedule.

1. The schedule shall be arranged so as to include:
   a. Chronological completion dates for temporary and permanent measures for controlling erosion and sediment.
   b. Location, type, and purpose for each temporary measure to be undertaken.
   c. Dates when those temporary measures will be removed.

1.04 SUBMITTALS

A. Product Data. Provide product data for each component to be used in erosion and sediment control.

B. Methods. Provide a description of and illustration showing anticipated storm water control and erosion control measures to be implemented during construction.

C. Subcontractor shall maintain inspection records.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Straw Bales
   1. Shall be securely tied.

B. Silt Fence
   1. Mirafi "Envirofence" or equal.
   2. Rexius Ecoberm or equal.

C. Stakes and Fasteners
   1. Shall be two rebar or two wood stakes for each hay/straw bale.

D. Temporary Erosion Control Fabrics
   1. North American Green S150BN or equal.
   2. Contech Excelsior Standard or equal.

E. Oil Sorbents
   1. Booms – New Pig Spaghetti Boom or equal shall be used.
   2. Socks – New Pig Skimmer Socks or equal shall be used.

F. Silt Curtain

1. Silt curtain shall be as described in the New York State Department of Transportation revised specification EI5-022 and EI50-023 or equal.

2.02 METHODS

A. Sediment Barriers - Sediment barriers shall be straw bales, stone, silt fences, ecoberms or other approved materials that will prevent migration of silts and sediment to receiving waters.

C. Temporary and Permanent Diversion Ditches – Permanent diversion ditches shall be installed as shown by the design drawings. Temporary diversion ditches shall be installed by the Subcontractor to control surface water and minimize construction water. In both cases, temporary erosion control matting shall be installed within the ditches to minimize soil erosion.

D. Oil Sorbent Booms/Socks - Oil sorbent booms/socks shall be installed to contain oil sheens emanating from waste materials. Keep a supply of clean oil sorbent booms/socks onsite at all times and install within one hour after discovery of a sheen. Routine maintenance and change out of soiled booms shall be performed weekly or at the engineers discretion.

E. Slope protection – Temporary erosion control matting shall be installed at locations shown on drawings.

F. Silt Curtain - Silt curtains shall be installed surrounding any outboard area where the required work may cause sediment to become suspended in the water column. Silt curtains must be installed prior to commencing work.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. It is the Subcontractor's responsibility to implement and maintain erosion and sedimentation control measures to effectively minimize erosion and sedimentation.

B. Earthmoving activities shall be conducted in such a manner as to minimize erosion and sedimentation.

C. Install erosion and sedimentation control measures in accordance with manufacturer's recommendations.

D. Erosion and sedimentation control measures shall be inspected by the Engineer and Subcontractor daily. Repairs shall be made as soon as practical.

E. Cover staged soil piles with temporary liner when precipitation is expected and during non-working hours to minimize soil erosion.

F. Employ, construct and maintain all temporary erosion and sediment control measures in accordance with *New York Guidelines for Urban Erosion & Sediment Control.*

3.02 SPECIAL CONDITIONS

A. Prohibited construction practices include, but are not limited to the following:

1. Dumping of spoil material into any stream corridor, any wetlands, any surface waters, at unspecified locations, or locations not expressly approved by Engineer.

2. Indiscriminate, arbitrary or capricious operation of equipment in any stream corridors, any wetlands or any surface waters.

3. Pumping of silt-laden water from trenches or other excavations into any surface waters, any stream corridors or wetlands, or locations not expressly approved by Engineer.

4. Disposal of trees, brush and other debris in stream corridors, wetlands, surface water, unspecified locations, or locations not expressly approved by Engineer.

5. Permanent or unspecified alteration of the flow line of any stream.

6. Open burning of construction project debris.

3.08 ADJUSTMENT OF PRACTICES

1. If the planned measures do not result in effective control of erosion and sediment runoff to the satisfaction of the regulatory agencies having jurisdiction over the project, the Subcontractor shall immediately adjust his program and/or institute additional measures so as to eliminate excessive erosion and sediment-runoff.

2. If the Subcontractor fails or refuses to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Subcontractor.

END OF SECTION 02370

SECTION 02457
STEEL SHEET PILE INSTALLATION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

a. Contract Drawings (drawings) and general provisions of the Contract including General and Supplemental Conditions apply to this Section.

b. Manufacturer's requirements for handling and installing proprietary sheet piling. Manufacturer requirements for sealing steel sheet pile interlocks to create a continuous low-permeable hydraulic barrier.

1.02 SUMMARY

a. The Work of this Section includes all labor, materials, equipment, and services necessary to provide a new continuous low-permeable hydraulic barrier, anchorage and temporary cofferdam sheet piling at locations as shown on the drawings and as specified herein.

   1. Provide and install steel sheet piles with corrosion protection/finished coating and sealed interlocks as specified on the drawings.
   2. All sheets designated as hydraulic barrier shall interlock with adjacent sheet pile, and interlocks shall be fully sealed by grouting to form a continuous low-permeable hydraulic barrier.
   3. Install a silt curtain(s) to isolate sediment turbidity caused by sheet pile installation activities.

b. Related Sections: The following Sections contain requirements that relates to this Section:

   1. Section 02223 Backfilling
   2. Section 02370 Erosion Control

1.03 DESIGN AND PERFORMANCE REQUIREMENTS

a. Piling Lengths: Steel sheet piles shall be of lengths indicated on the drawings. Steel sheet piles shall not be ordered (procured) until Engineer approves the order lengths. The continuous low-permeable hydraulic barrier and anchorage sheeting shall penetrate a minimum of three feet into the silt and clay layer (designated as Stratum M2), or deeper in accordance with the drawings.

1.04 SUBMITTALS

a. General: Refer to and comply with Section 01100 "Submittal Procedures" for procedures and additional submittal criteria.

b. Qualification Submittals

1. Subcontractor's Engineer: Submit qualifications of the Subcontractor's quality control Engineer, demonstrating experience in monitoring and certifying sheet pile barrier installations of similar type to those of this Project.

2. Coating Applicator: Submit qualifications & corrosion protection coatings applicator. Identify equipment and processes used, and quality control procedures.

c. Product Data:

1. Submit manufacture's technical data for products used in Work of this Section including steel material, driving shoes, splice welding materials, and corrosion protection.
2. Equipment Data – For Information: Submit complete description of each pile hammer to be used for installation of the steel sheet piles, including operational characteristics, rated energy, date of purchase, and date and description of last overhaul. Include data for driving helmets and templates, capblocks, and pile cushions. Descriptive information shall include manufacturer's name, model numbers, and capacity.

d. Shop Drawings

1. Pile Plan: Prior to driving steel sheet piles, submit a sheet pile identification plan showing location of each sheet pile, construction and final cut-off elevations, and steel sheet pile field numbering system.
2. Pile Driving Template: Submit drawings or a detailed description of steel sheet pile driving template showing conformance with provisions for Templates in Article "Pile Driving Equipment".

3. Pile Work:

a. Steel Sheet Piles: Submit shop drawings including details of top protection, special reinforcing tips, tip protection, lagging, splices, fabricated additions to plain steel sheet piles, cut-off method(s), and corrosion protection. Also, provide the following:

1) Steel sheet pile order lengths.
2) Shop drawings for sheet piling and fabricated sections as applicable. Include complete dimensions, section properties, and details of steel sheet piling.
3) Details and dimensions of templates and other temporary guide structures for installing the steel sheet piling.
4) Details of the method(s) for handling steel sheet piling to prevent permanent deflection, distortion, or damage to steel sheet piling interlocks. Include crane lifting and rigging calculations.
5) Location and identification numbering of steel sheet piling and sequence for driving all steel sheet piles.
6) Method for clearing obstructions or for breaking through obstructions to install the steel sheet piles to the minimum tip elevation specified.
7) Procedure for driving sheet piles so that all interlock seals will be effective.
8) Procedure for splicing steel sheet piles including a plan for positioning all field and shop splices and detailed procedures for performing field splices.
9) Pile pulling method.
10) Quality assurance plan for grouting or sealing of interlocks for forming continuous low-permeable hydraulic barrier sheeting in accordance with manufacturer's instructions using materials that meet the compatibility test results performed for the project.

b. Submit design and calculations for temporary cofferdam installation, and removal of 72 inch, 84 inch, 42 inch, 30 inch and 16 inch pipelines at the outboard continuous low-permeable hydraulic barrier steel sheet pile alignment.

e. Quality Control Submittals

1. Certificates

a. Material Certificates: Provide certified steel material mill test reports for steel sheet pile material. Submit for each shipment identified with specific lots prior to installing steel sheet piling. Identification data should include steel sheet piling type, dimensions, chemical composition, mechanical properties, section properties, heat number, and mill identification mark.

b. Verification of welder qualifications for welding crew.

c. Provide documentation for 100% visual inspection of all welded sheet pairs.

d. Provide documentation of inspection and certification of coating.

2. Field Quality Control Records:

a. Submit steel sheet pile driving records.

b. Submit interlock sealing records to demonstrate the continuity and low permeabilility of the installed hydraulic barrier.

c. Provide record of obstructions and means for clearing obstructions to permit installation.

f. Contract Closeout Submittals

1. "As-built" Record Drawings showing steel sheet pile locations and plumbness. The proposed tie rods shall not be installed until the as-built drawings depicting steel sheet pile locations have been verified and approved.

1.05 REFERENCES AND STANDARDS

a. Applicable rules, regulations, codes and ordinances of Local, State and Federal authorities.

b. Site Health and Safety Plan.

c. Drawings & Specifications of this contract, including Sediment & Erosion Control Plan, etc.

d. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

e. American Society for Testing and Materials (ASTM)

ASTM A 572/A 572M High-Strength Low-Alloy Columbium-Vanadium Structural Steel

f. American Welding Society (AWS)

AWS D1.1 Structural Welding Code – Steel

1.06 QUALITY ASSURANCE

a. The Subcontractor shall supply manufacturer's documentation to confirm that the sealing or grouting of the interlocks is being performed in accordance with the manufacturer's recommendations. Documentation will also include a written letter by a representative of the manufacturer who must be on-site at the start of work to confirm suitable application of interlock sealant/grouting.

1.07 DELIVERY AND STORAGE

a. Handle steel sheet piling using handling holes or lifting devices. Handle long length steel sheet piles with care to prevent damage. Support on level blocks or racks spaced not more than 10 feet apart and not more than 2 feet from the ends. Supports between multiple lifts shall be in a vertical plane.

b. Protect steel sheet piling to prevent damage to coatings and to prevent corrosion prior to the installation.

1.08 PROJECT CONDITIONS

a. Subsurface Conditions (Including Underwater):

   1. Review all available information and make an independent interpretation of the surface and subsurface conditions that may affect the work of the Contract including mudline soundings, known remnant pile locations, etc.

b. Steel sheet piles can be driven from a combination of waterborne and land based equipment, as necessary. Pile driving rigs or cranes will not be permitted to operate off the Causeway without prior approval from Honeywell and/or Parsons.

c. Do not drive steel sheet piles until the mudline is cleared of debris and other materials have been removed that may interfere with steel sheet pile driving.

PART 2 - PRODUCTS

2.01 STEEL SHEET PILES

a. Steel sheet piling shall be of full-length sections and dimensions shown on the drawings. Provide steel sheet piling with standard lifting holes.

b. Coating for Steel Sheet Piles shall be as specified on the drawings.

2.02 FIELD TOUCH UP OF PILE COATING

a. A compatible touchup system shall be provided for repair of coating defects, in accordance with the coating manufacturer's recommendations and as approved by the Engineer.

2.03 PILE DRIVING EQUIPMENT

a. Pile Hammer: Use a pile hammer having a delivered force or energy suitable for the total weight of the pile and for driving through the subsurface materials to be encountered at the site to achieve the required design tip elevations. Operate hammer at the rate(s) recommended by the manufacturer throughout the entire driving period. Any damage to steel sheet piles caused by the use of a pile hammer shall be repaired or steel sheet piles replaced. Comply with requirements from adjacent utility owners.

b. Drive Templates: Prior to driving, provide template or driving frame suitable for aligning, supporting, and maintaining sheet piling in the correct position during setting and driving. Use a system of structural framing sufficiently rigid to resist lateral and driving forces and to adequately support the steel sheet piling until design tip elevation is achieved.

   1. Templates shall not move when supporting the steel sheet piles. Fit templates with wood blocking to bear against the web of each alternate sheet pile and hold the sheet pile at the design location alignment. Provide outer template straps or other restraints as necessary to prevent the sheets from warping or wandering from the alignment, or racking along the alignment.

PART 3 - EXECUTION

3.01 PREPARATION

a. Layout and Field Survey Work: Comply with the drawings and additional provisions of this Section.

b. Install silt curtain to isolate the lake working area.

c. Set drive template. Hold in place with spud piles.

d. Before and after driving, touch up all abraded surfaces in the coating on steel sheet piles and clean and touch up all field welds. Perform touch-up in accordance with the coating manufacturer's recommendations and as approved by the Engineer.

3.02 OBSTRUCTION REMOVAL

a. Install and maintain sediment and erosion control system.

    1. Install a floating silt curtain outboard of the active earthwork. Silt curtain shall extend eight feet or more below the float line and as a minimum to the mudline.

b. Remove any visible surface obstructions

c. Remove the 72" and 84" intakes pipes, as shown on the drawings.

    1. Plug pipes at locations shown.
    2. Fill pipes with CLSM to limits shown.

d. Remove the 42", 30" and 16" intake pipes, not shown on the drawings.

    1. Plug pipes.

3.03 PILE DRIVING

a. Maintain steel sheet piling plumb during steel sheet pile driving. Drive steel sheet piles in such a manner as to prevent damage to the steel sheet piles and to provide continuity of interlocks for formation of a continuous low-permeable hydraulic barrier.

    1. Drive specified steel sheet piles to provide minimum penetration into the Stratum M2, at estimated tip elevations shown on the drawings If a refusal is reached at higher elevation than the estimated tip elevation, withdraw the sheet (or pair), and take appropriate measures to penetrate the obstruction, such as spudding,

b. Adjust pile guides and leads to keep the sheet pile vertical when driving. Check plumb of each sheet pair with 4 feet level after initial set and at half driven depth. Document plumb at both of these stages. Pull out steel sheet pile and re-drive if plumb is not within the specified tolerances.

c. Spudding for obstructions: Spudding for installation of steel sheet piles may be used. Spudding shall be performed at no additional cost to Parsons. Discontinue spudding approximately five feet above the indicated estimated tip elevation.

d. Cutting and Splicing: Subject to the provisions of other paragraphs in this Article and/or Contract Documents, piles driven to refusal or the point where additional penetration cannot be attained, extend above the required tip elevation in excess of the specified tolerance shall be cut off to the required elevation. Piles driven below the required tip elevation and piles damaged by driving and cut off to permit further driving shall be extended as required to reach the top elevation by splicing as approved by the Engineer.

1. If directed or otherwise approved by the Engineer , splice steel sheet piles as required for driving them to depths greater than shown on the drawings and extending the sheet piles up to the required top elevation.
   a. Piles adjoining spliced piles shall be in full lengths unless otherwise approved.
   b. Full penetration weld splices shall be performed in such a way as not to compromise the impermeability of the sheet piles wall as a continuous hydraulic barrier.
   c. If splices are allowed in adjoining piles the splices shall be spaced at least five feet apart in elevation.
2. Welding of splices shall conform to the requirements of paragraph entitled "Welding" in this Article.

   a. Ends of piles to be spliced shall be squared before splicing to eliminate dips or camber. Splice piles with concentric alignment of the interlocks so that there are no discontinuities, dips or camber at the abutting interlocks.
   b. Spliced piles shall be free sliding and able to obtain the maximum swing with contiguous piles.

3. Bolt holes shall be drilled or may be burned and reamed by approved methods which will not damage the surrounding metal. Holes other than bolt holes shall be reasonably smooth and the proper size for rods or other items to be inserted. Do not use explosives for cutting. Bolt holes other than for tie-rods will not be permitted below final cutoff excavation. Bolt holes or other holes below the final cut off excavation shall be sealed by welding.

e. Welding: Shop and field welding for splicing and other conditions, qualification of welding procedures, welders, and welding operators shall be in accordance with AWS D1.1.

f. Tolerances in Driving: See drawings.

g. Correction of Deficiencies:

1. Pulling and Redriving:

   a. See Article "Field Quality Control". Pull selected steel sheet piles after driving to determine the condition of the underground portions of sheet piles. Subcontractor shall remove and replace, at no additional cost to the Owner, any pile pulled and found to be damaged to the extent that its usefulness in the structure is impaired. Redrive piles pulled and found to be in satisfactory condition.
   b. The sheet pile pulling method must be approved by the Engineer.

2. Remove and replace steel sheet piles found to be out of interlock at no additional cost to Honeywell.

h. Local Utility Requirements:
   1. Utilize equipment, procedures, and monitoring as requested by adjacent utility owners.

3.04 FIELD QUALITY CONTROL

a. Perform continuous inspection during steel sheet pile driving. Inspect all steel sheet piles for compliance with tolerance requirements. Bring any unusual problems that may occur to the attention of the Construction Manager.

b. Inspection of Driven Steel Sheet Piling:

   1. Subcontractor shall inspect the interlocks of the portion of driven piles that extend above the ground level. Remove and replace piles found to be out of interlock as specified for Correction of Deficiencies in Article "Pile Driving" herein.

   2. Subcontractor may be required to pull selected steel sheet piles after driving to determine the condition of the underground portions of the sheet piles.

      a. Comply with Correction of Deficiencies and Pulling and Redriving in Article "Pile Driving" herein.

   3. Sealing of interlocks shall be in accordance with manufacturer's instructions for quality control and in accordance with the subcontractor's approved submittal.

c. Installation Records:

1. Maintain a pile driving record for each sheet pile. Indicate on the installation record installation dates and times, type and size of hammer, rate of operation, total driving time, pile locations, pile number, pile plumbness, tip elevations, ground elevations, cut-off elevations, and any reheading or cutting of steel sheet piles.
2. Record any unusual sheet pile driving problems during driving.
3. All records documenting interlock sealing shall be provided.

END OF SECTION

SECTION 02990

FINISH GRADING, TOPSOIL, AND SEEDING

PART 1 GENERAL

1.01 SUMMARY

A. The work specified herein includes the material, equipment, labor, and services necessary to install topsoil and seed on the cap, restore wetlands and repair disturbed and/or damaged areas.

B. Related Sections:
   1. Section 02370 - Erosion Control

1.02 SUBMITTALS

A. Materials and Products:
   1. Topsoil Source and Test Results: A written statement giving location and owner of topsoil source and testing results meeting Part 2.01.
   2. Grass Seed Vendors Certificate: Seed vendor's certified statement for the grass seed mixture required, stating common name, percentage by weight, and percentages of purity and germination.
   3. Hydroseeding: Data concerning hydroseeding equipment (if used) including material application rates.
   4. Fertilizer: Manufacturer's product data showing contents and test results.
   5. Mulch source: A written statement giving location of mulch source.
   6. Temporary Erosion Control Matting: manufacture's product data.

B. Installer - Name of subcontractors (if used) and Qualification Statements.

C. Manufacturer's Certification - Certify that products meet or exceed specified requirements.

D. Borrow Source and Quality Control testing results per Part 3.02D.

1.03 REFERENCES

A. Environmental Protection Agency (EPA) Test Methods for Evaluating Solid Waste (SW)
   1. EPA Method 6010B – Inductively Coupled Plasma-Atomic Emission Spectometry.
   2. EPA Method 7841 – Thallium (Atomic Absorption, Furnace Technique).

3. EPA Method 8082 – Polychlorinated Biphenyls (PCBs) by Gas Chromatography.
4. EPA Method 8260B – Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).
5. EPA Method 8270C – Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS).

1.04 QUALITY ASSURANCE

A. Label seed in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable State seed laws. Furnish seed in sealed bags or containers bearing the date of the last germination which shall be less than six (6) months prior to commencement of planting operations. Inspect seeding material upon arrival at the job site. Remove unacceptable material from the job site. Seed shall be from same or previous year's crop. Each variety of seed shall have a purity of more than 85%, a percentage of germination more than 90%, a weed content of less than 1%, and contain no noxious weeds.

B. In-place quality assurance testing will not be conducted for topsoil.

PART 2 - PRODUCTS

2.01 TOPSOIL

A. Topsoil shall be natural, friable, and fertile soil that meets the USDA basic soil texture classes of loam, silt loam or sand loam to be recovered from the A horizon of an in-place soil. Topsoil shall be capable of sustaining healthy plant life and reasonably free of subsoil, heavy or stiff clay, brush, roots, weeds, other objectionable plant matter, foreign material, stones larger than 2 inches in greatest dimension, and any other materials unsuitable or harmful for plant growth. Topsoil as delivered to the site or stockpiled shall meet the following requirements:

1. Well graded with a maximum particle size of 2 inches, 90 to 100 percent passing 1 inch, 85 to 100 percent passing 1/4 inch, and 20 to 80 percent passing a Number 200 sieve. Clay content of material passing the Number 200 sieve shall not be greater than 25 percent, as determined by hydrometer analysis.
2. pH between 6.0 and 7.5.
3. Contains greater than 3 percent and less than 20 percent organic matter as determined by loss of ignition of moisture-free samples dried at 100° to 110° Celsius.
5. Contains no nuisance weeds including seeds, stems, or rhizomes of purple loosestrife, *Phragmites*, or Japanese Knotweed.
6. TCL/TAL concentrations less than the DEC regulations under Part 375.6.

Test the topsoil at a frequency of 1 test per every 2,500 cy and a minimum of once per source.

2.02 FERTILIZER

A. Fertilizer shall be a starter fertilizer of commercial stock, of neutral character, with elements derived from organic sources. It shall be a complete, prepared and packaged material and shall contain a minimum of 18 percent nitrogen, 24 percent phosphoric acid, and 6 percent potash. Other fertilizer mixes may be acceptable provided the application rate is adjusted to provide equal quantities. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.

2.03 GRASS SEED

A. A seed mixture beneficial to wildlife, as recommended by the US Fish and Wildlife Service, consisting of the following proportions or approved equal:

Common Name	Species	Pounds per Acre
White Clover	*Trifolium repens*	5
Lancer perennial pea	*Lathyrus latifolius*	5
Perennial ryegrass	*Lolium perenne*	10
Timothy grass	*Phleum pratense*	10
Orchard grass	*Dactylis glomerata*	10
Smooth bromegrass	*Bromus intermis*	10

2.04 MULCH

A. Straw Mulch shall be comprised of clean, threshed straw of oats, wheat, barley, or rye that is free from noxious weeds (including purple loosestrife and phragmites), mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10 inches or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment. Hay shall not be used for mulch.

B. Hydromulch (Optional) shall be Wood Cellulose Fiber Pulp processed to contain no growth or germination inhibitor factors, and dyed an appropriate color to facilitate visual metering of the application of the materials. Hydromulch manufactured from recycled paper products is acceptable.

2.05 EROSION CONTROL FABRIC

A. Temporary Erosion Control Fabric: Refer to Section 02370 – Erosion Control.

PART 3 - EXECUTION

3.01 APPLICATION PROCEDURES

A. Surfaces that have been disturbed or damaged during completion of the work shall be regraded, receive 6 inches of topsoil, reseeded and mulched. The Subcontractor may select straw mulch, temporary erosion control fabric and/or hydromulch for these areas.

3.02. TOPSOIL

A. Place topsoil to a depth greater than required so that after compaction, the complete work will conforms to the depth lines, grades, and elevations indicated on the Drawings. Do not spread topsoil while frozen or muddy.

B. Borrow Source and Quality Control Testing

1. Conduct borrow source testing of proposed topsoil and quality control testing of on-site stockpiled topsoil as follows:

Material Property	Test Method	Frequency
Particle Size Analysis	ASTM D-422	1 sample/2,500 cy
Soil pH	ASTM D-4972	1 sample/2,500 cy
Organic Content	ASTM D-2974	1 sample/2,500 cy

2. Submit testing results to the Engineer for approval prior to placement. If topsoil is placed prior to approval and the results show a failure, topsoil must be removed and replaced at the Subcontractor's expense.

3.03. FERTILIZER

A. Apply fertilizer to uplands, side slopes and cap with a mechanical spreader at a minimum rate of 200 lbs/acre or in accordance with the manufacturer's suggested rate.

B. After topsoil has been spread and the fertilizer applied, scarify or harrow to a depth of 2 inches and leave in a roughened condition for seeding. Remove and dispose of stiff clods, lumps, roots, litter and other foreign material.

3.04. SEEDING

A. Apply seed mixture uniformly on the prepared surface with a hand or mechanical spreader at a minimum rates specified in Part 2.03. Lightly rake and roll seed into the surface.

B. Apply hydroseed (optional) uniformly on the prepared surface.

3.05. MULCH AND EROSION CONTROL MATTING

A. Place mulch or erosion control matting immediately after the application of topsoil and seed.

B. Apply straw mulch with a mulch blower at a uniform rate of 1,500 lbs/acre. Anchor with a tackifier.

C. Install erosion control matting per the manufacturer's recommended procedures.

3.06 WARRANTY

A. One year warranty period for topsoil and seed from the date of substantial completion or correction period. Maintain as necessary including repairs, re-seeding, re-mulching so that an acceptable grass stand is established. The Engineer will provide approval and direction during the one-year warranty period.

END OF SECTION 02990

Section K

Drawings

WILLIS AVE./SEMET TAR BEDS IRM
HYDRAULIC BARRIER WALL

DRAWING NO.	TITLE
C001	COVER SHEET
C002	GENERAL PLAN
C003	DETAIL PLAN 1
C004	DETAIL PLAN 2
C005	DETAIL PLAN 3
C006	DETAIL PLAN 4
C007	LONGITUDINAL SECTION 1
C008	LONGITUDINAL SECTION 2
C009	LONGITUDINAL SECTION 3
C010	LONGITUDINAL SECTION 4
C011	LONGITUDINAL SECTION 5
C012	LONGITUDINAL SECTION 6
C013	SECTIONS
C014	SECTIONS
C015	SECTIONS
C016	SECTIONS
C017	SECTIONS
C018	DETAILS
C019	DESIGN CRITERIA
C020	MISCELLANEOUS DETAILS
C021	GENERAL NOTES & REQUIREMENTS
C022	GENERAL NOTES & REQUIREMENTS
C023	INSTRUMENTATION PLAN & NOTES
C024	INSTRUMENTATION PARTIAL PLAN & SECTION
C025	INSTRUMENTATION SECTIONS AND DETAILS

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE
–	–	–	–				–

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE

REFERENCE	DWG. NO.

APPROVALS	DATE

EQUIPMENT P.O. B/M NUMBERS:

JOB NO. ______

CONTRACTOR'S JOB NO. ______

SCALE: NTS

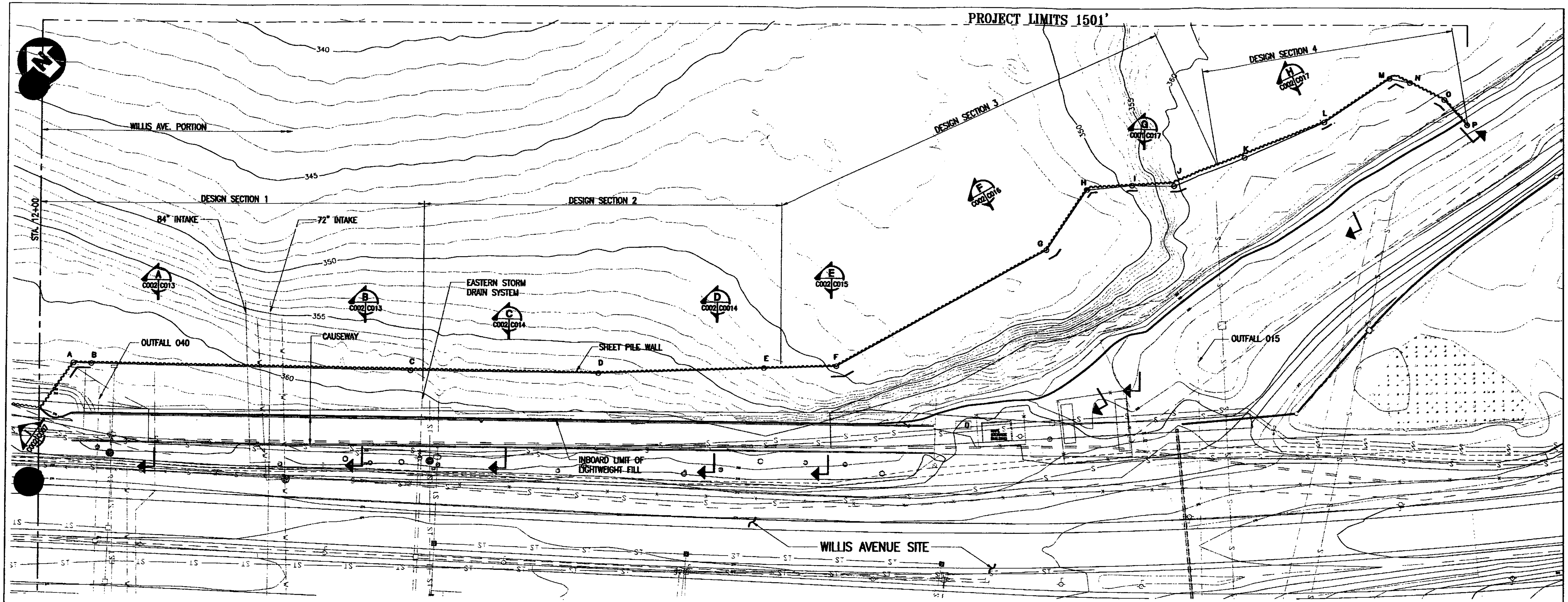
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

COVER SHEET

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
E.C.	[illegible]	T.R.	[illegible]

LOCATION: C001 REV



PLAN

50 25 0 50 100

SCALE: 1"=50'

COORDINATE POINTS		
LABEL	NORTH	EAST
A	1118639.84	922413.47
B	1118625.71	922426.18
C	1118378.07	922654.64
D	1118233.24	922790.02
E	1118111.10	922914.82
F	1118057.30	922969.30
G	1117985.30	923211.0
H	1117999.20	923286.50
I	1117968.50	923322.80
J	1117936.04	923352.75
K	1117902.85	923425.95
L	1117868.23	923510.67
M	1117850.92	923591.26
N	1117832.55	923602.76
O	1117794.13	923614.32
P	1117757.82	923611.67

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. & M NUMBERS:

JOB NO.

CONTRACTOR'S JOB NO.

SCALE: 1"=50'-0"

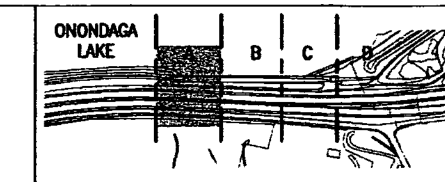
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

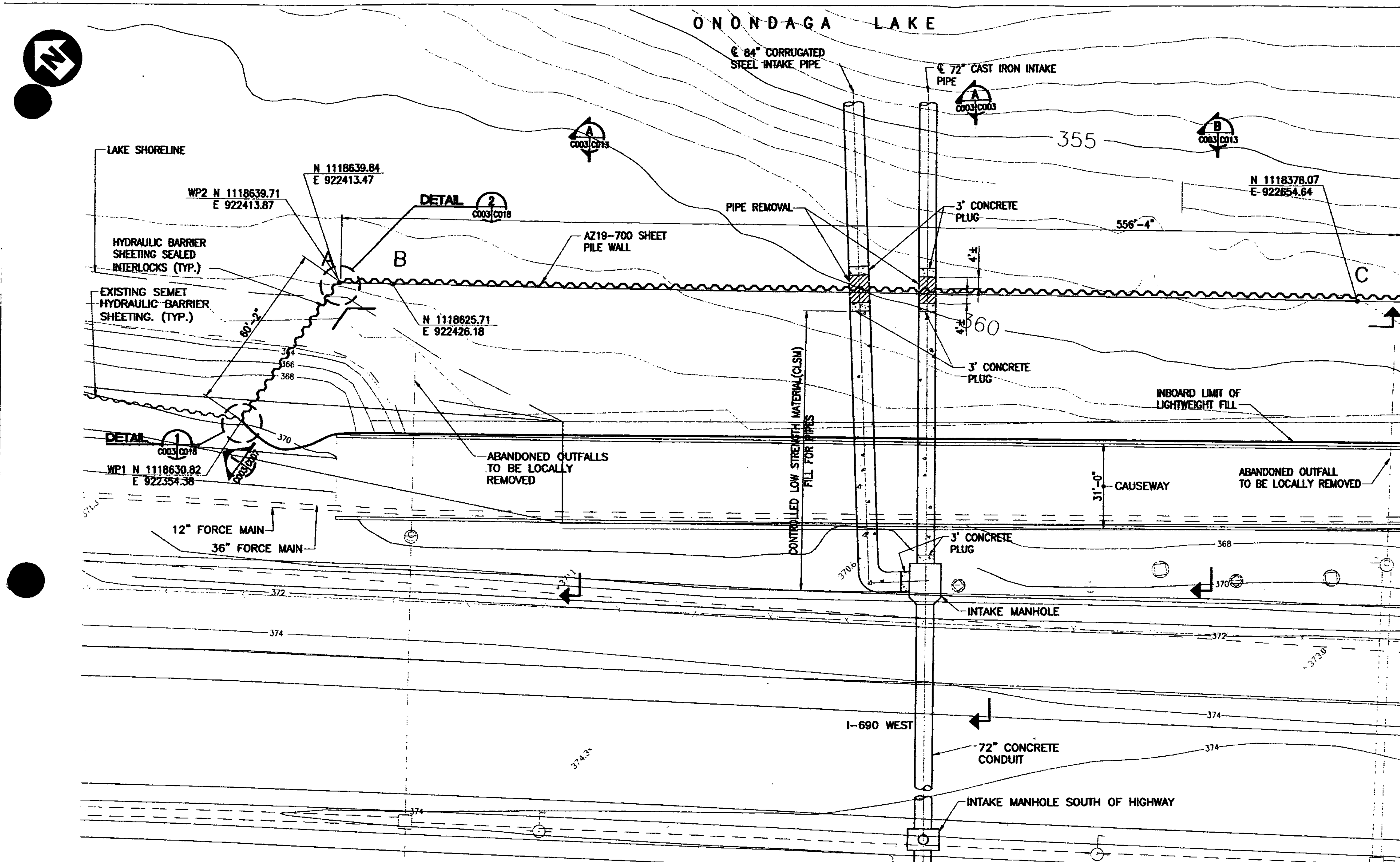
SHEET PILE WALL
GENERAL PLAN

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
J.E.M./A.Y.	02-08-08	T.R.	02-08-08

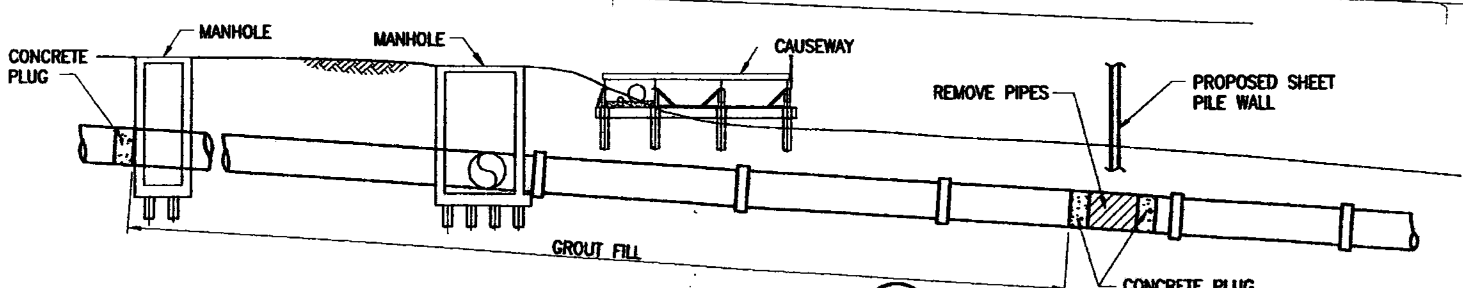
LOCATION | C002 | REV





PLAN

SCALE: 1"=20'



SECTION A C003 C003

SCALE: 1/16"=1'-0"

REQUIREMENTS FOR SEALING INTAKE PIPES

1. CAST 4000 PSI UNREINFORCED CONCRETE PLUGS WITHIN THE 84 INCH AND 72 INCH INTAKES AT THE LOCATIONS SHOWN.
2. FILL PIPES WITH CLSM. REMOVE WATER FROM PIPES AS CLSM IS PLACED.
3. INSTALL FLOATING SILT CURTAIN AND LOCALLY REMOVE MUD TO ACCESS PIPES AT SHEETING ALIGNMENT.
4. LOCALLY REMOVE PIPES AND RESTORE MUDLINE.

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS SHOWN

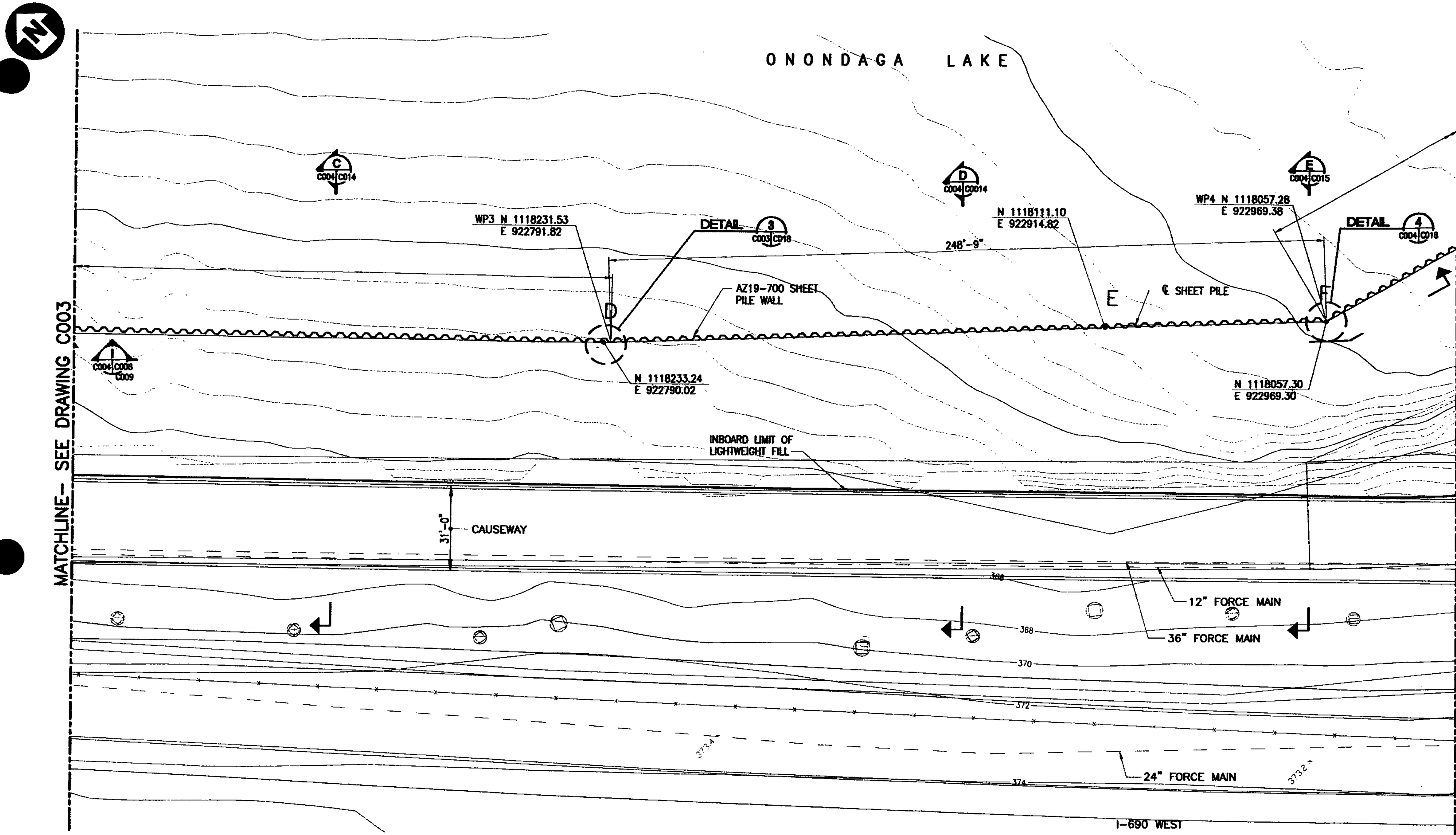
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
DETAIL PLAN 1

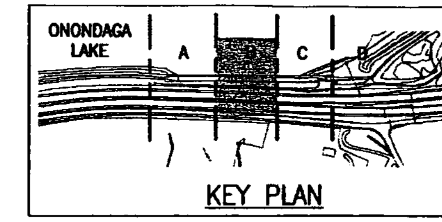
Honeywell

DRAWN	DATE	CHK.	DATE

LOCATION
C003



PLAN



NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												
																		EQUIPMENT P.O. & /M NUMBERS:	

JOB NO. ______
CONTRACTOR'S JOB NO. ______
SCALE: 1"=20'-0"

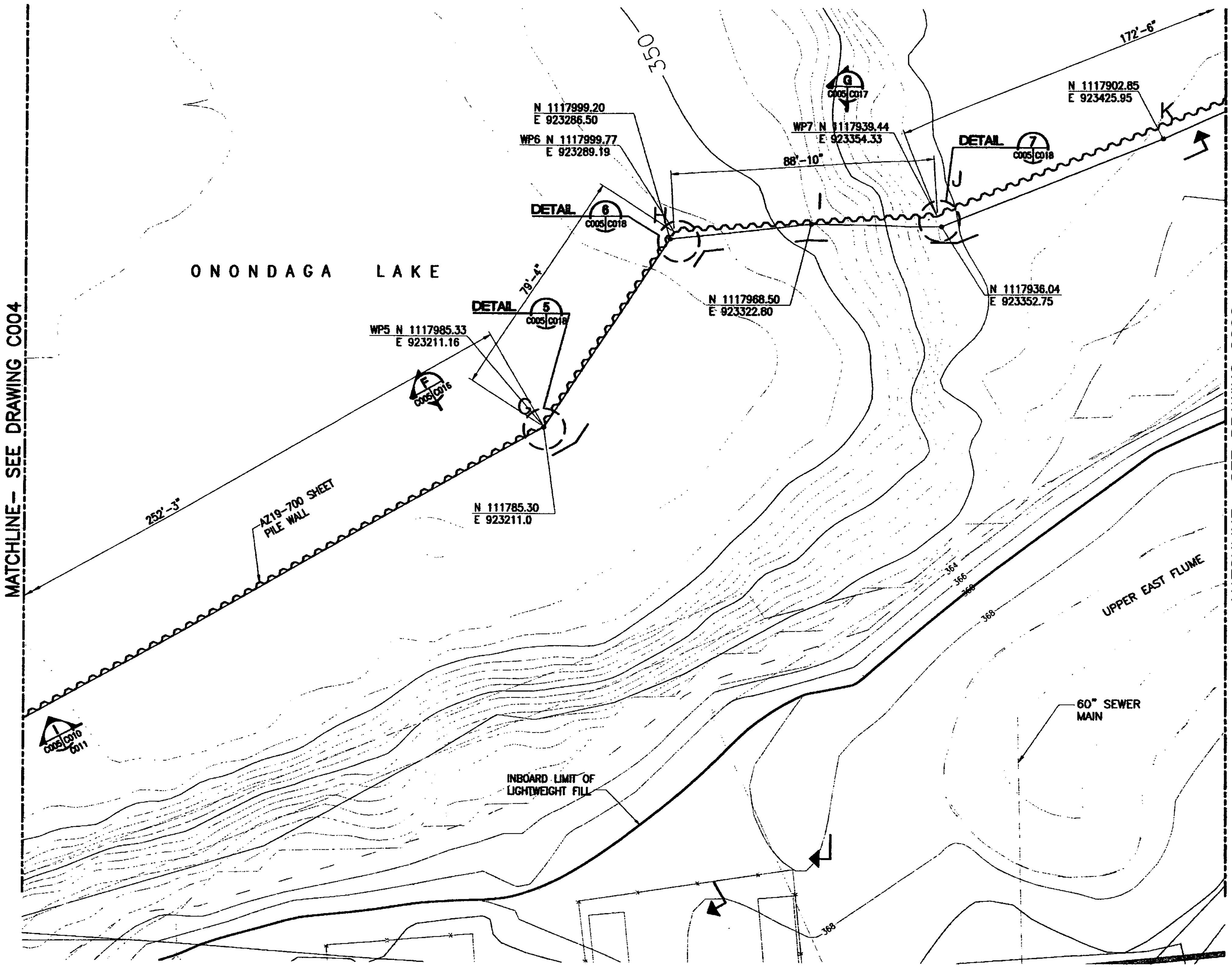
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
DETAIL PLAN 2

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

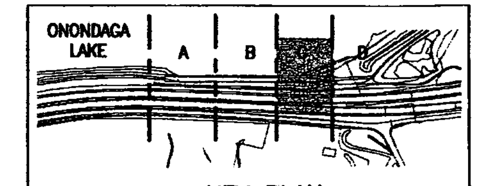
J.R./A.Y.	02-08-08	T.H.	02-08-08
DRAWN	DATE	CHK.	DATE

LOCATION
C004
REV 0



PLAN

SCALE: 1"=20'



KEY PLAN

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: 1"=20'-0"

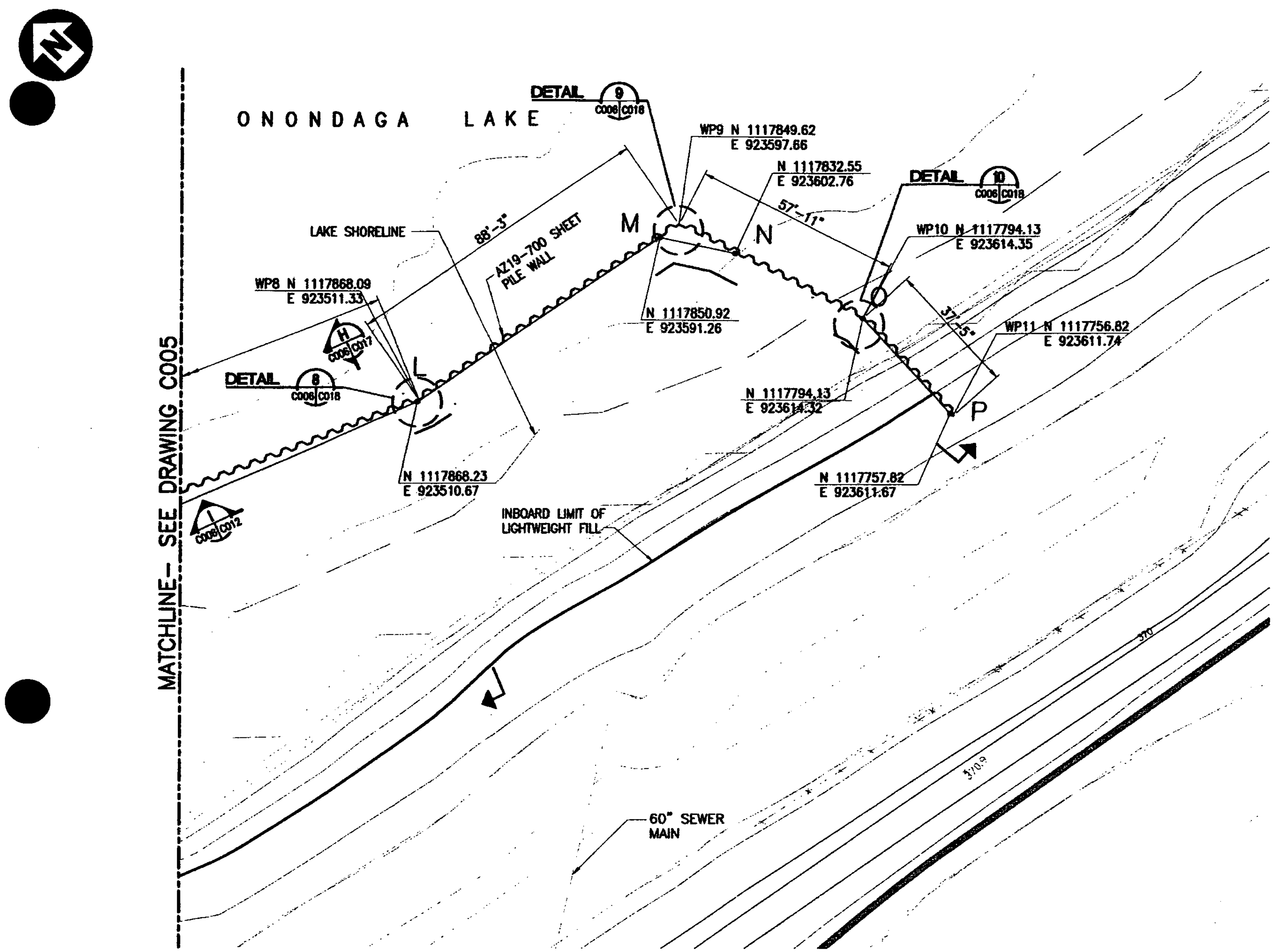
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
DETAIL PLAN 3

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
J.R./A.Y.	02-08-08	T.E.	02-08-08

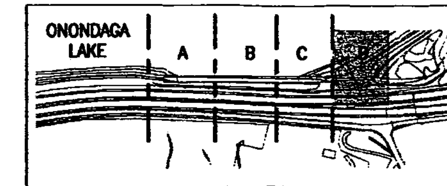
LOCATION
C005
REV 0



PLAN

20 10 0 20 40

SCALE: 1"=20'



KEY PLAN

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.

CONTRACTOR'S JOB NO.

SCALE: 1"=20'-0"

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
DETAIL PLAN 4

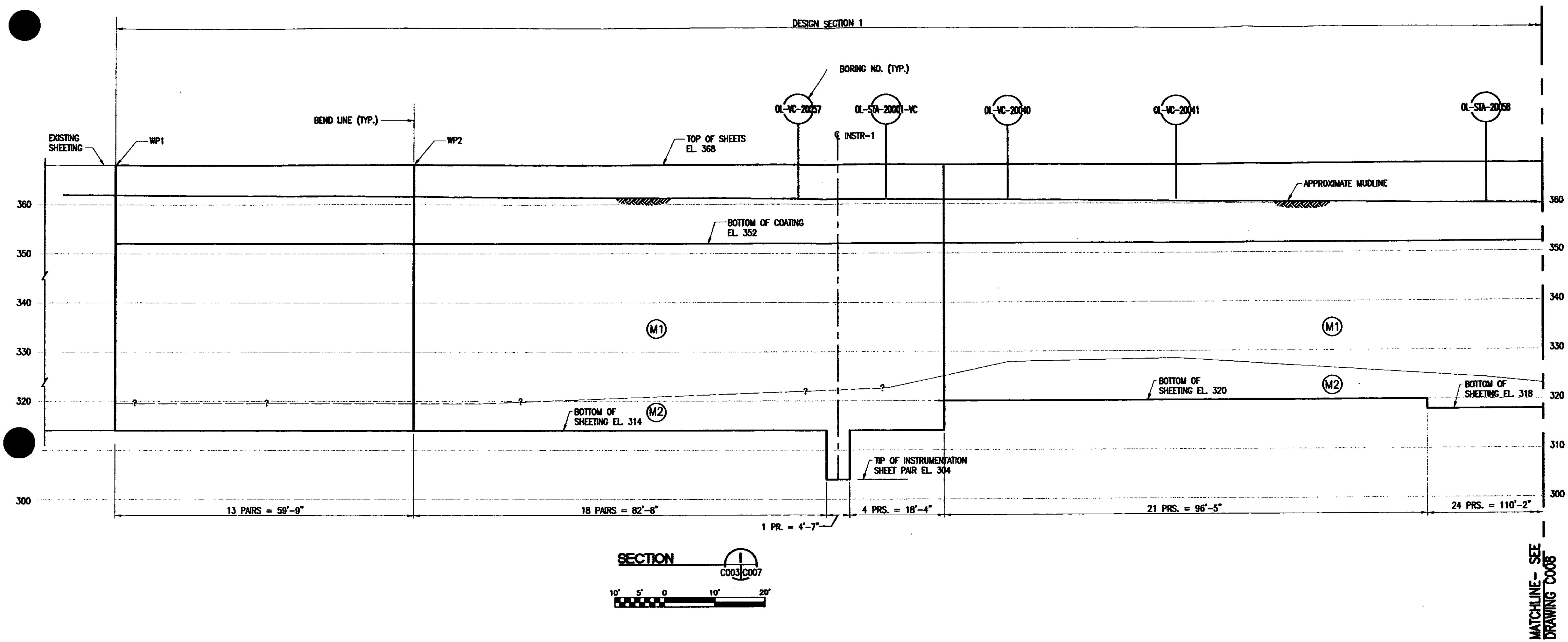
Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

J.R./K.Y.	02-08-08	T.B.	02-08-08
DRAWN	DATE	CHK.	DATE

LOCATION

C006

REV 0



GENERAL NOTES:

1. STRATIFICATIONS SHOWN ARE NECESSARY INTERPOLATIONS BETWEEN BORINGS AND MAY NOT REPRESENT ACTUAL SUBSURFACE CONDITIONS.
2. TOP OF COATING AT ELEVATION +366.

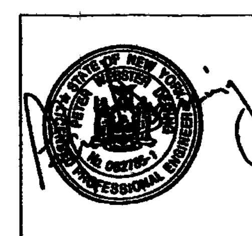
GENERAL STRATA DESCRIPTIONS:

F2 SOLVAY WASTE: SOFT WHITE SILT, SOME TO TRACE FINE SAND

M1 MARL: SOFT GRAY CLAYEY SILT, SOME TO TRACE FINE TO COARSE SAND, GRAVEL, SHELLS.

M2 SILT & CLAY: SOFT TO MEDIUM STIFF BROWN CLAYEY SILT TO SILTY CLAY, TRACE FINE SAND AND SILT SEAMS.

DRAWING IS HALF-SIZE IF PLOTTED 11x17



HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA - 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: GRAPHIC

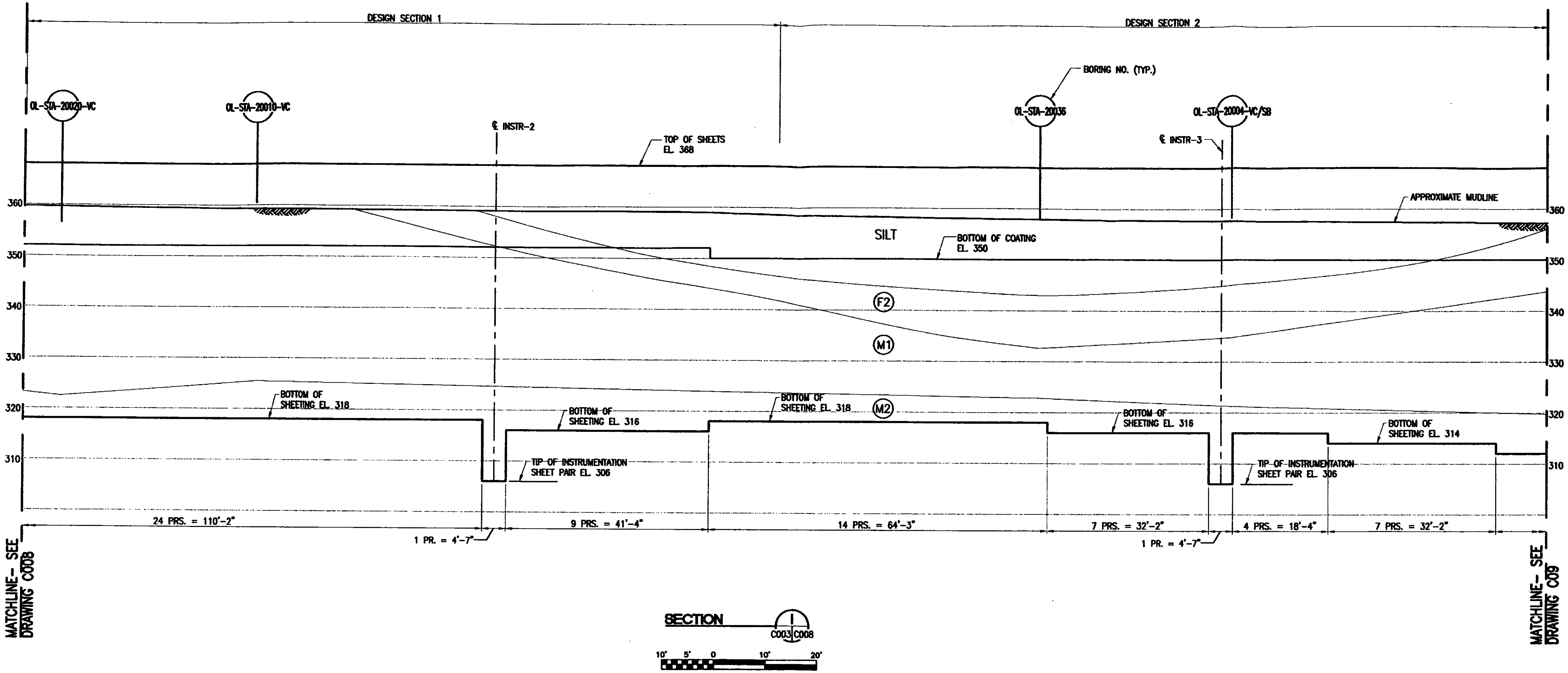
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
LONGITUDINAL SECTION 1

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
AM/LY.	05-07-08	JR.	05-07-08

LOCATION
C007
REV



DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

JOB NO. ______
CONTRACTOR'S JOB NO. ______
SCALE: GRAPHIC

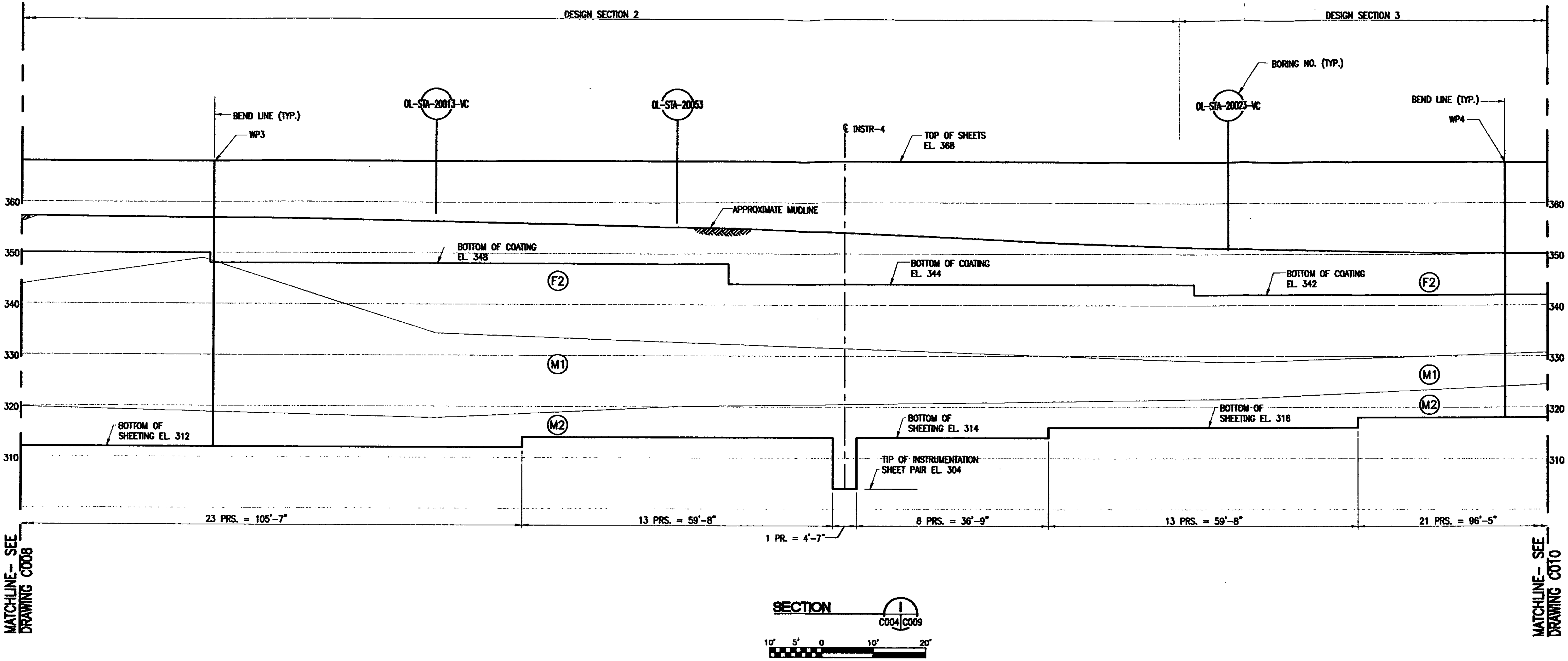
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
LONGITUDINAL SECTION 2

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
A.R./A.X.	02-08-08	T.R.	02-08-08

LOCATION | C008 | REV



SECTION 1 C004 C009

DRAWING IS
HALF-SIZE IF
PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: GRAPHIC

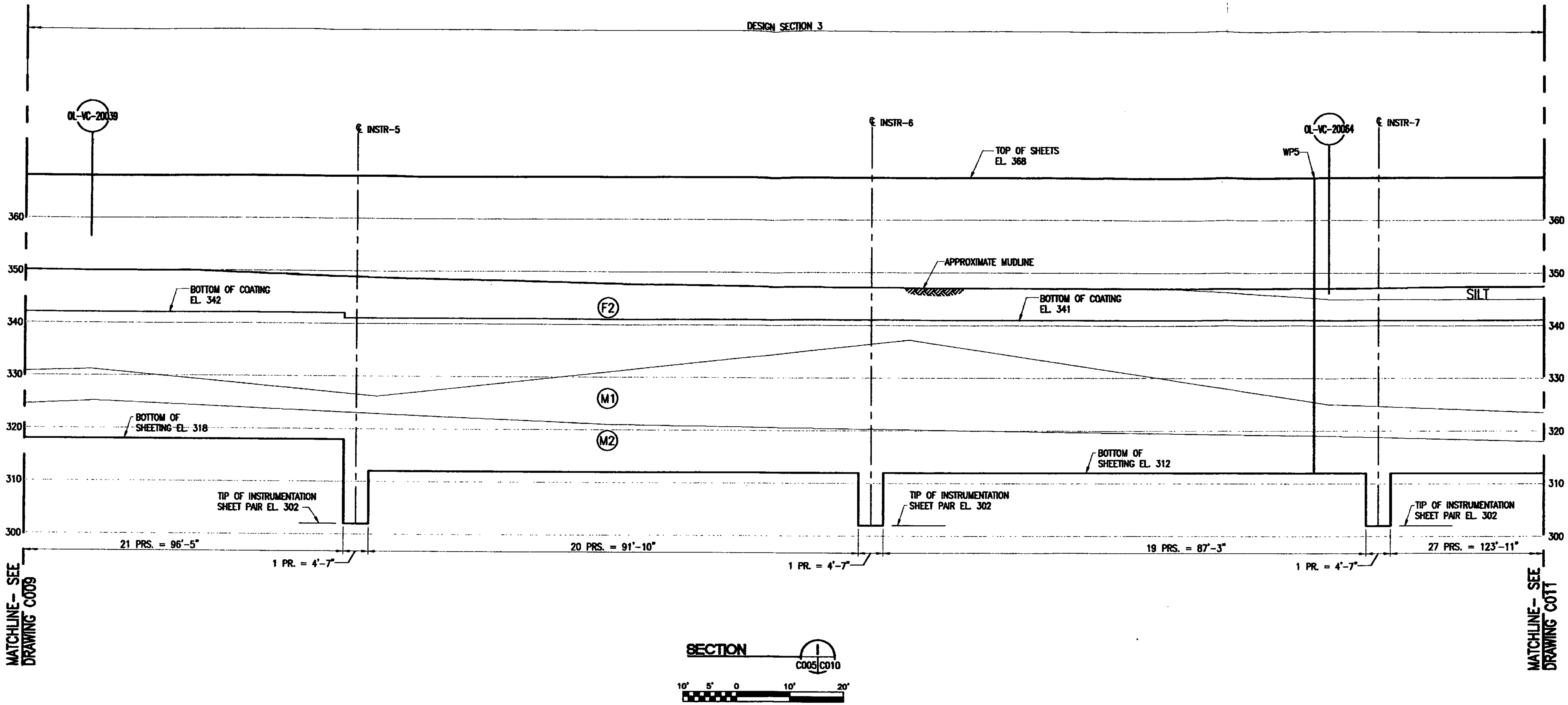
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
LONGITUDINAL SECTION 3

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
AR./A.Y.	02-08-08	T.R.	02-08-08

LOCATION | C009 | REV



DRAWING IS
HALF-SIZE IF
PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.
–	–	–	–				–										

APPROVALS	DATE
EQUIPMENT P.O. B/M NUMBERS:	

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: GRAPHIC

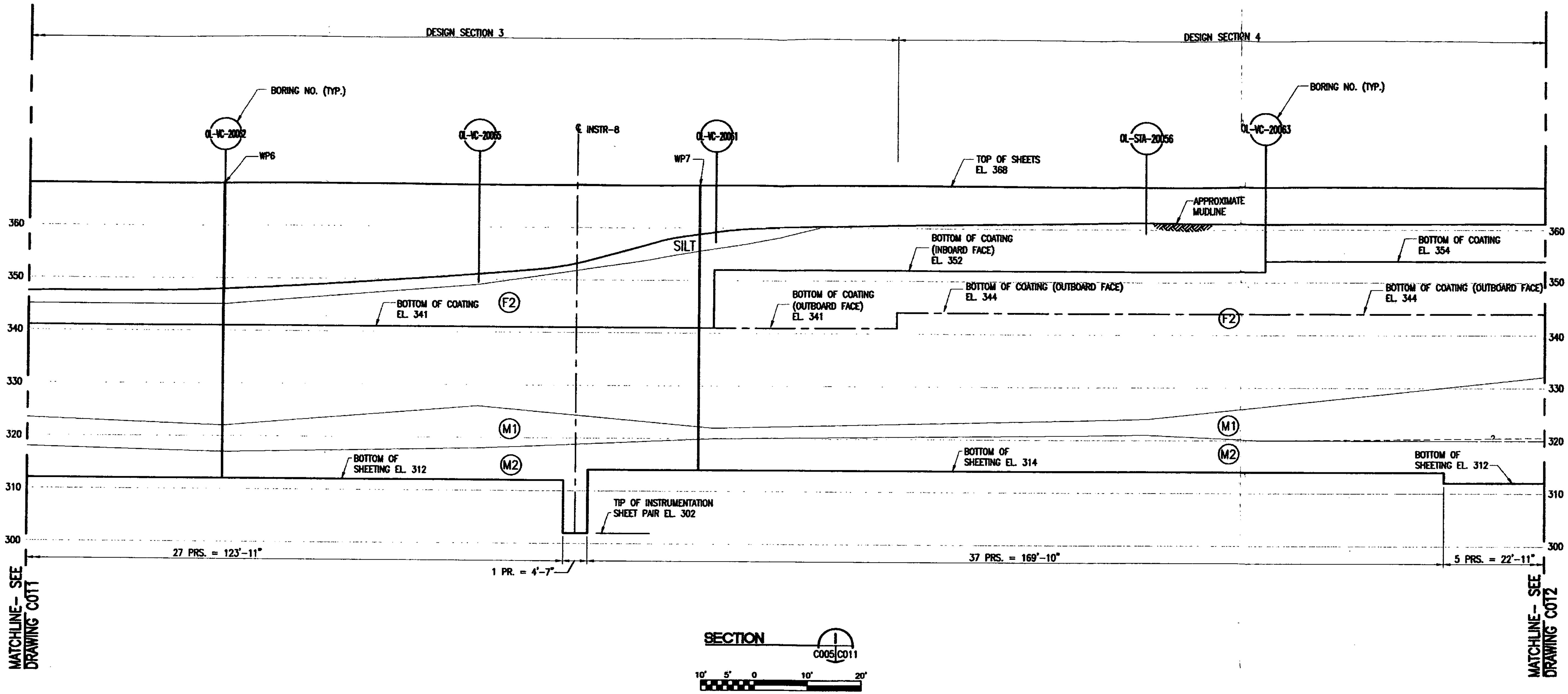
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
LONGITUDINAL SECTION 4

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

AH/AY	02-08-08	T.R.	02-08-08
DRAWN	DATE	CHK.	DATE

LOCATION
C010
REV



DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NOTICE
THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: GRAPHIC

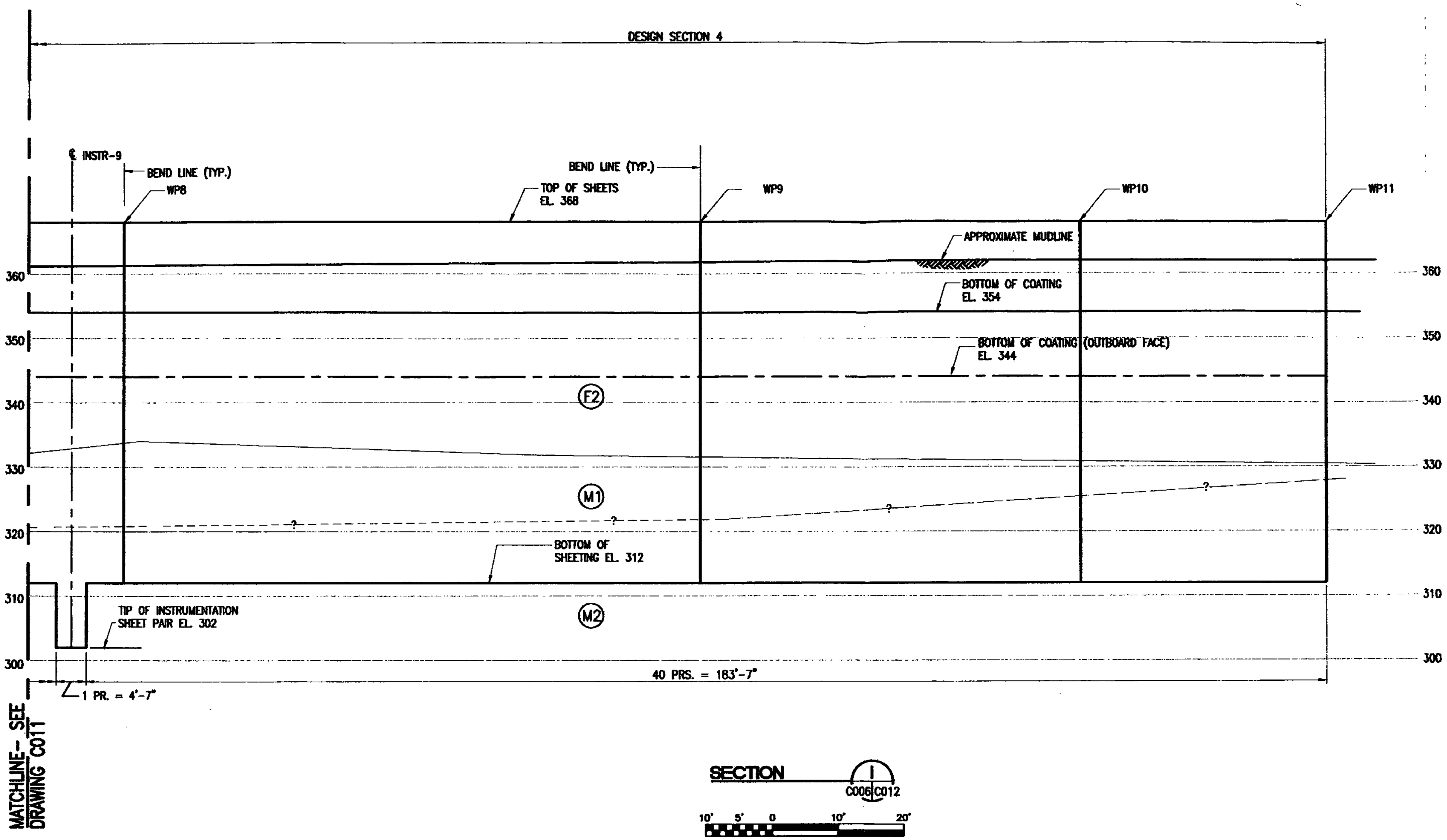
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
LONGITUDINAL SECTION 5

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
A.R./A.Y.		A.R.	

LOCATION | C011 | REV



DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NOTICE

THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: GRAPHIC

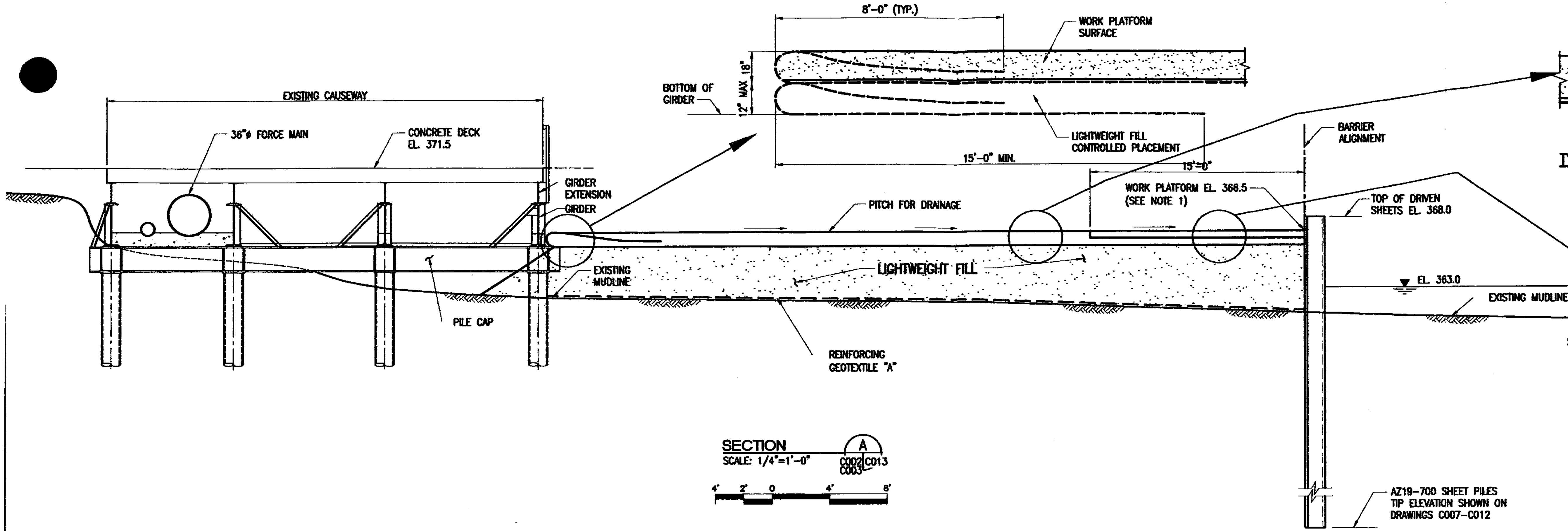
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SHEET PILE WALL
LONGITUDINAL SECTION 6

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD., BOX 2105
MORRISTOWN, NJ 07962

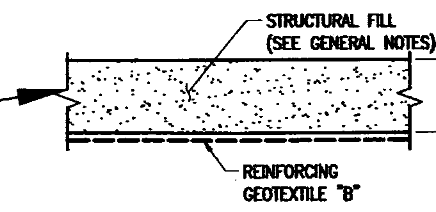
DRAWN	DATE	CHK.	DATE
AJL/A.T.	05-07-08	J.R.	05-07-08

LOCATION | C012 | REV

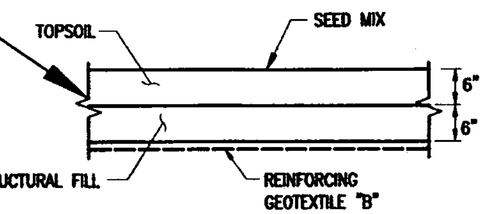


SECTION A
SCALE: 1/4"=1'-0"
C002 C003 C013

4' 2' 0 4' 8'



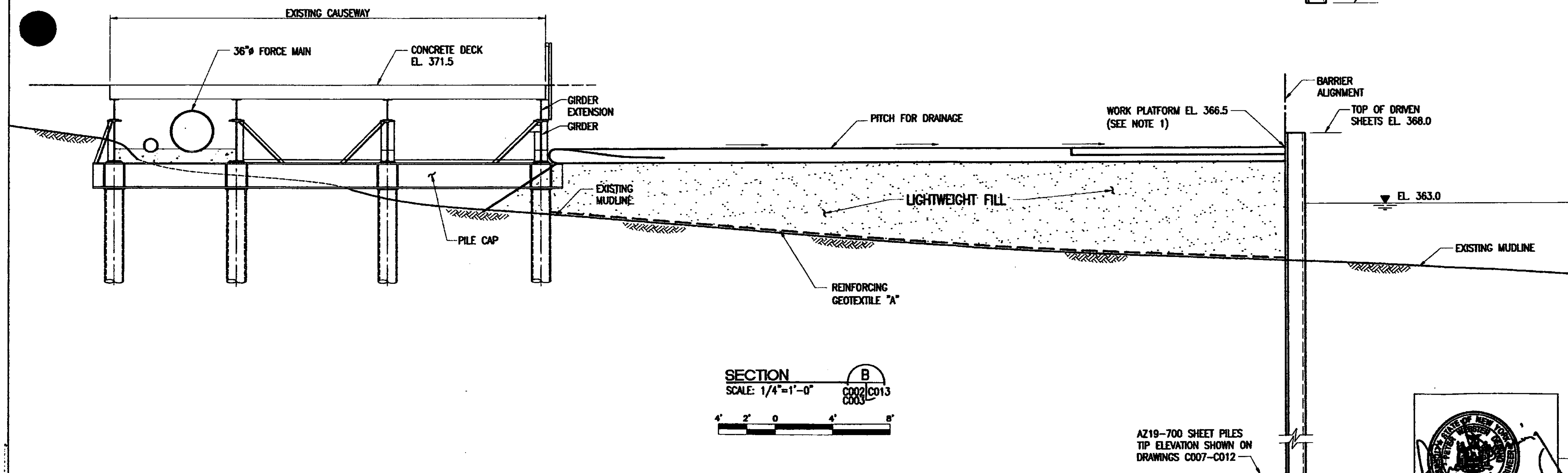
TYPICAL WORK PLATFORM DETAIL



TYPICAL VEGETATIVE BUFFER DETAIL

NOTES:

1. AT 50'± O.C., CUT-OFF ONE SHEET WIDTH AT EL. 366.5 TO ALLOW SURFACE WATER DRAINAGE.
2. DRAINAGE PITCH SHALL BE ONE PERCENT.



SECTION B
SCALE: 1/4"=1'-0"
C002 C003 C013

4' 2' 0 4' 8'

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NOTICE

THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–		–				–												

EQUIPMENT P.O. B/M NUMBERS:

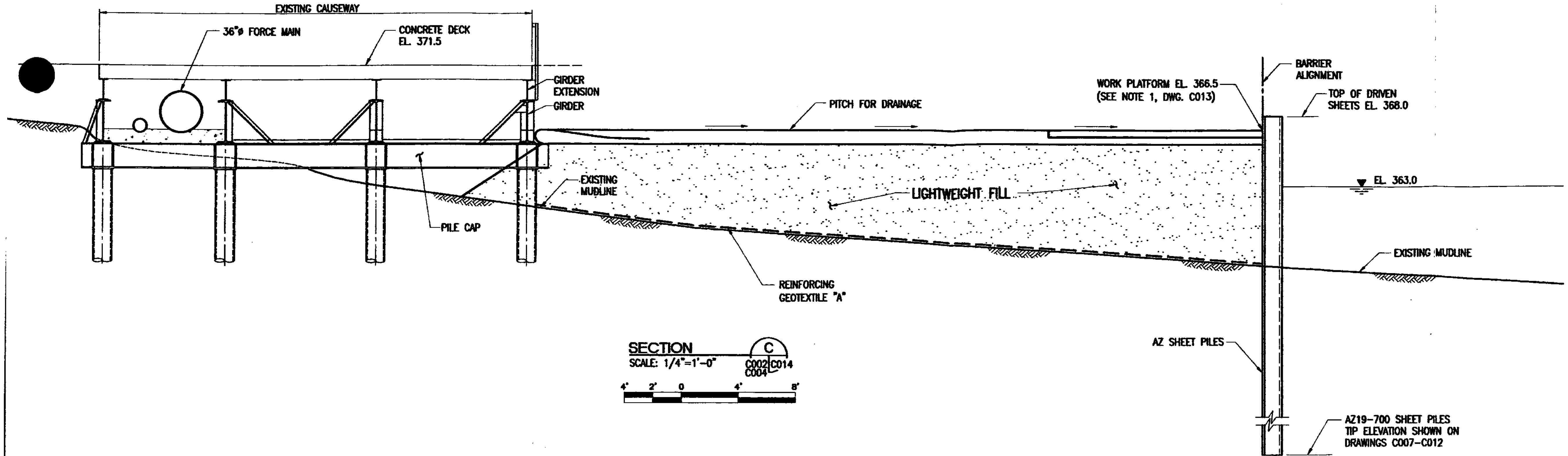
JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS NOTED

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

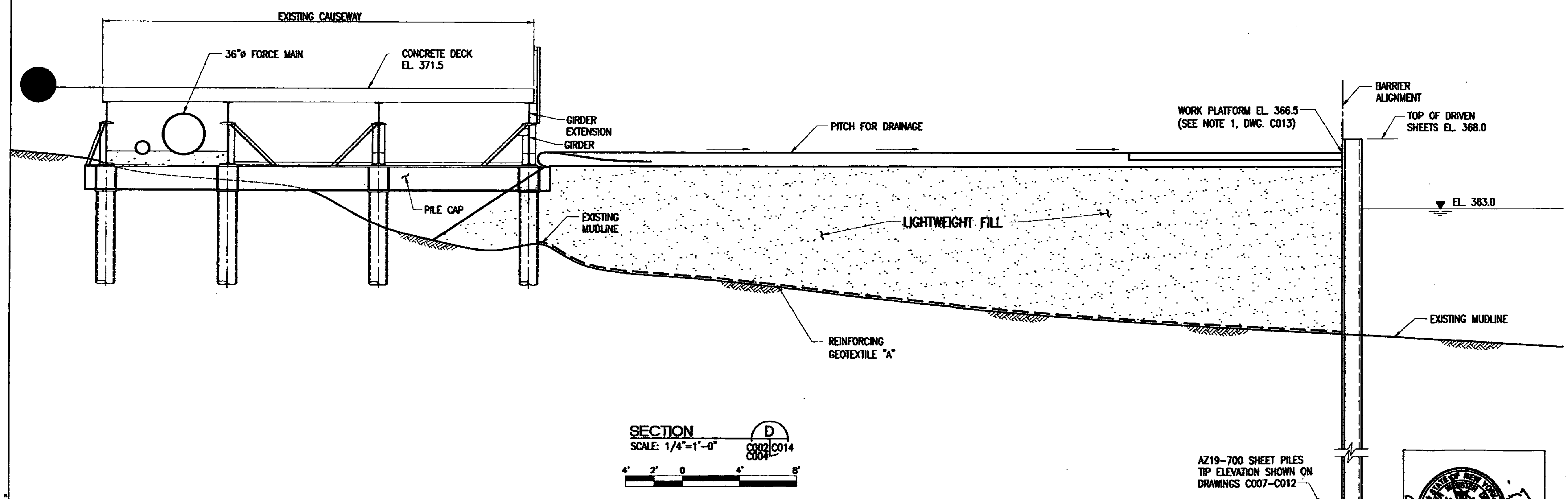
SECTIONS

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
LOCATION	C013	REV	



SECTION C
SCALE: 1/4"=1'-0"
C002 | C014
C004



SECTION D
SCALE: 1/4"=1'-0"
C002 | C014
C004

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

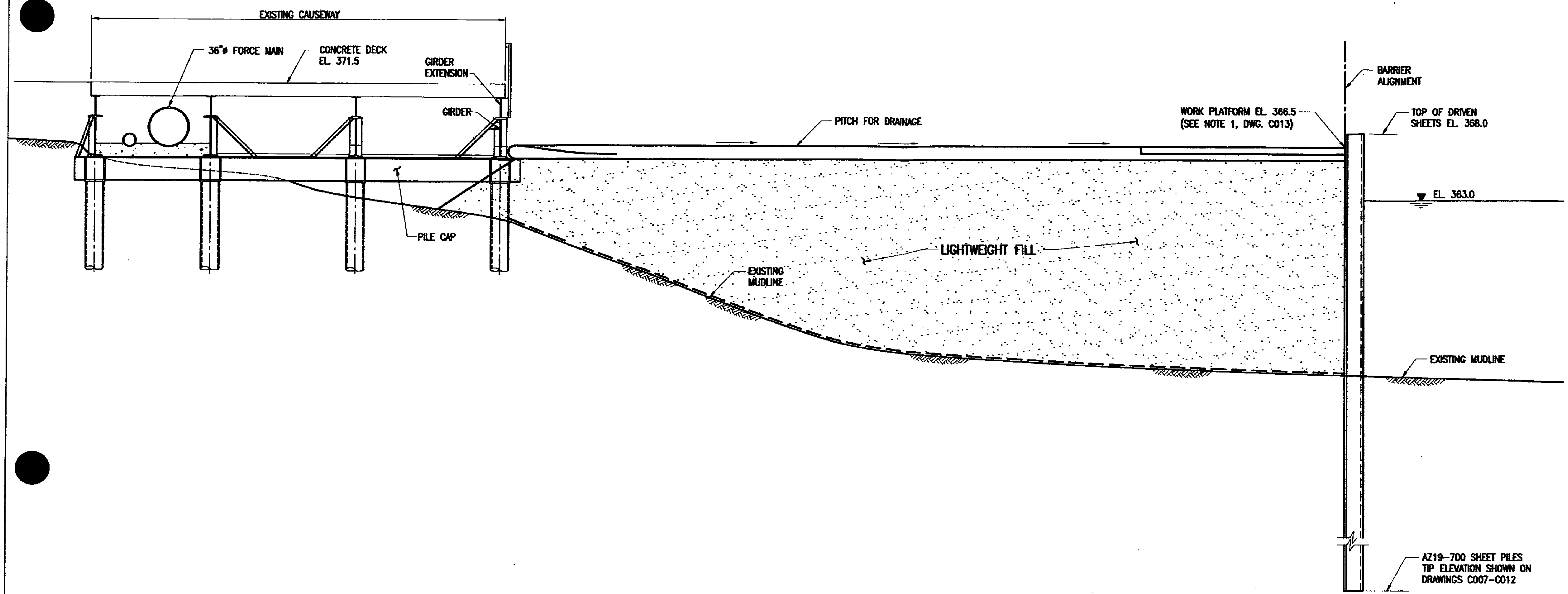
EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS NOTED

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK
SECTIONS

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
LOCATION	C014		REV



SECTION E
SCALE: 1/4"=1'-0"
C002 C015
C004

4' 2' 0 4' 8'

DRAWING IS
HALF-SIZE IF
PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NOTICE
THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

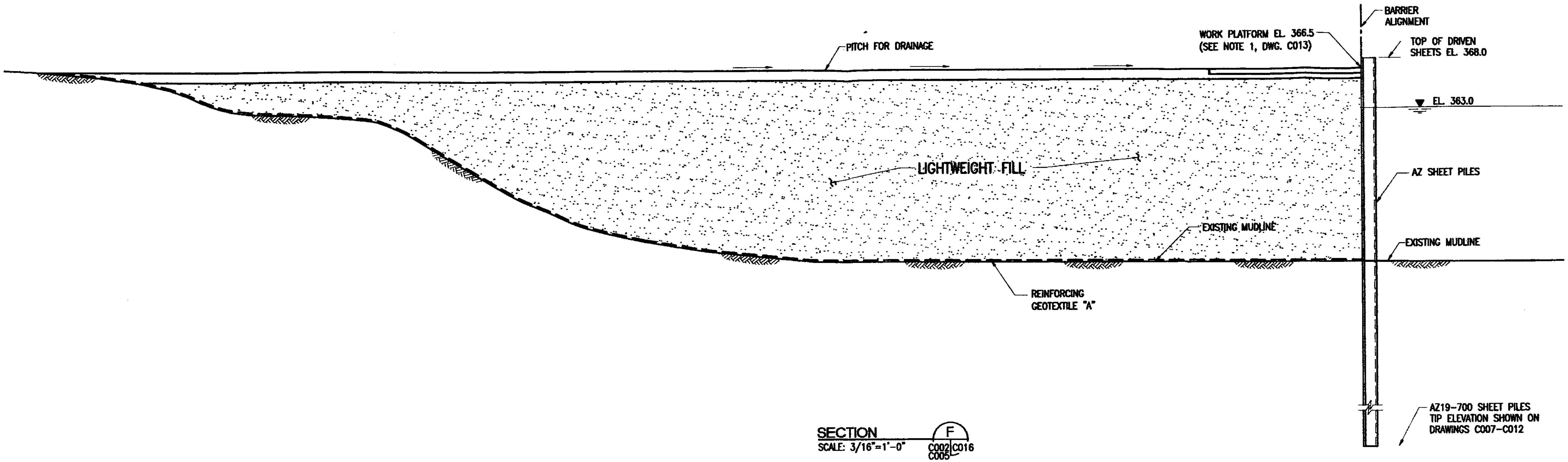
JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS NOTED

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK
SECTIONS

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
[illegible]	05-07-08	[illegible]	05-07-08

LOCATION
C015
REV



SECTION F
SCALE: 3/16"=1'-0"
C002 C016
C005

4' 0 4' 8' 12'

DRAWING IS
HALF-SIZE IF
PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA - 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.
-	-	-	-				-										

APPROVALS	DATE

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS NOTED

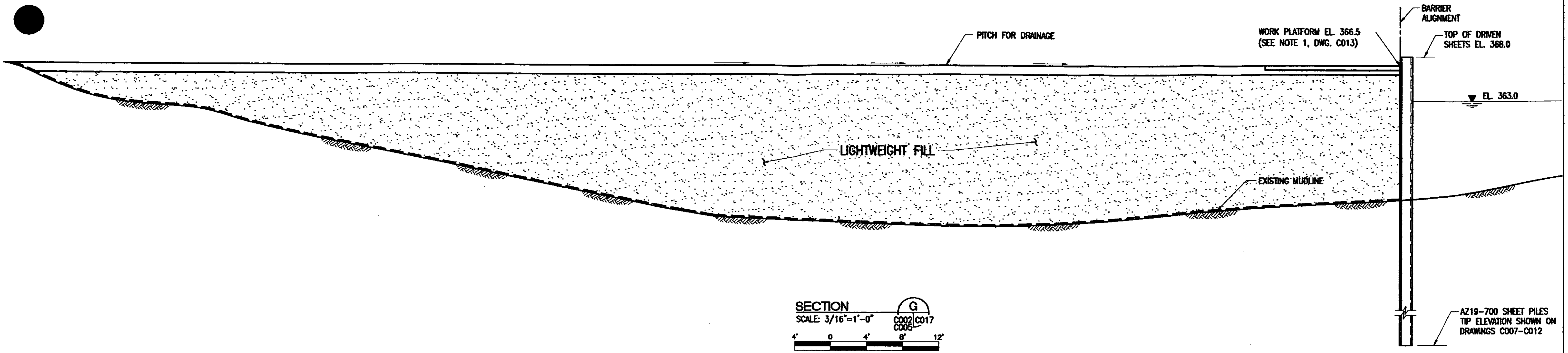
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SECTIONS

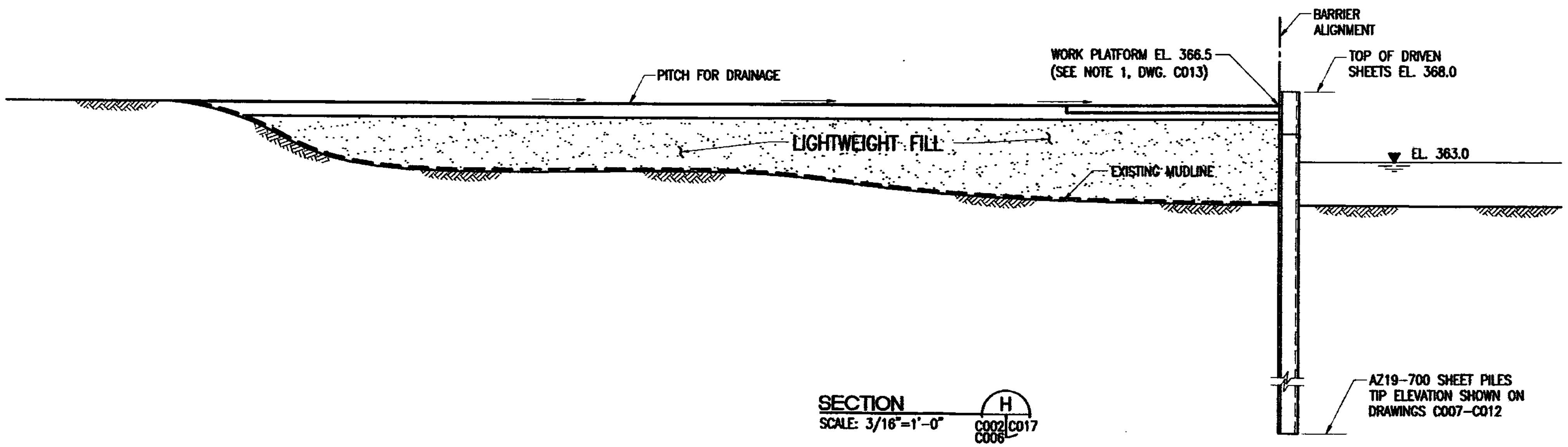
Honeywell
EHS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
L.Y.	05-07-08	J.R.	05-07-08

LOCATION
C016
REV



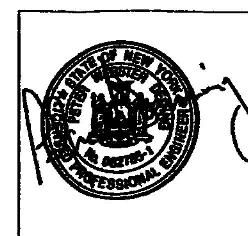
SECTION G
SCALE: 3/16"=1'-0"
C002 C005 C017



SECTION H
SCALE: 3/16"=1'-0"
C002 C006 C017

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL



PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS NOTED

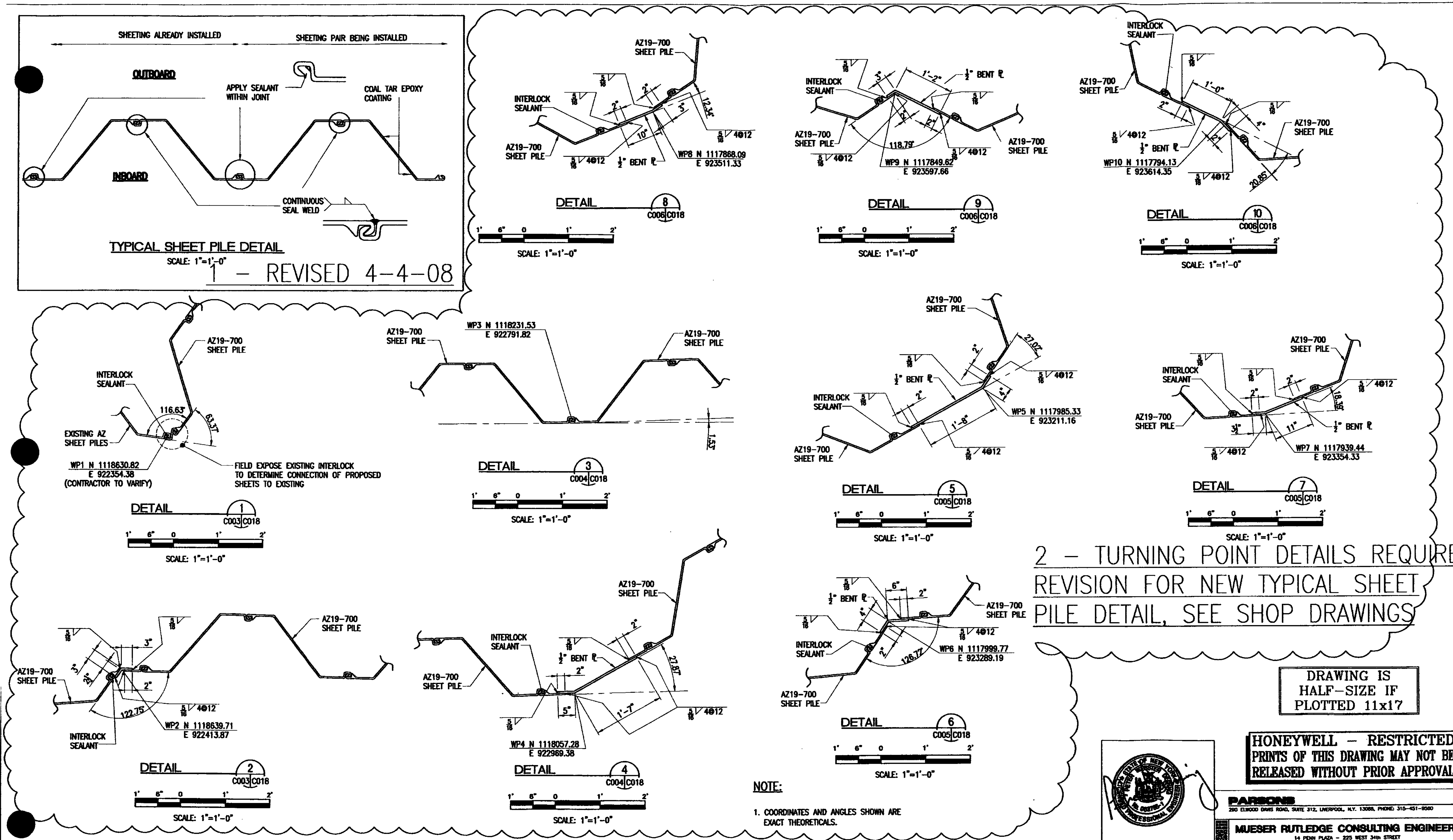
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

SECTIONS

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

I.Y.	05-07-08	J.R.	05-07-08
DRAWN	DATE	CHK.	DATE

LOCATION | C017 | REV



NOTE:

1. COORDINATES AND ANGLES SHOWN ARE EXACT THEORETICALS.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA - 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE
-	-	-	-				-
1	TYPICAL SHEET PILE DETAIL	JLR					4-8-08
2	SUPERCEDED BY SHOP DRAWINGS	JLR					4-8-08

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

EQUIPMENT P.O. B/M NUMBERS:

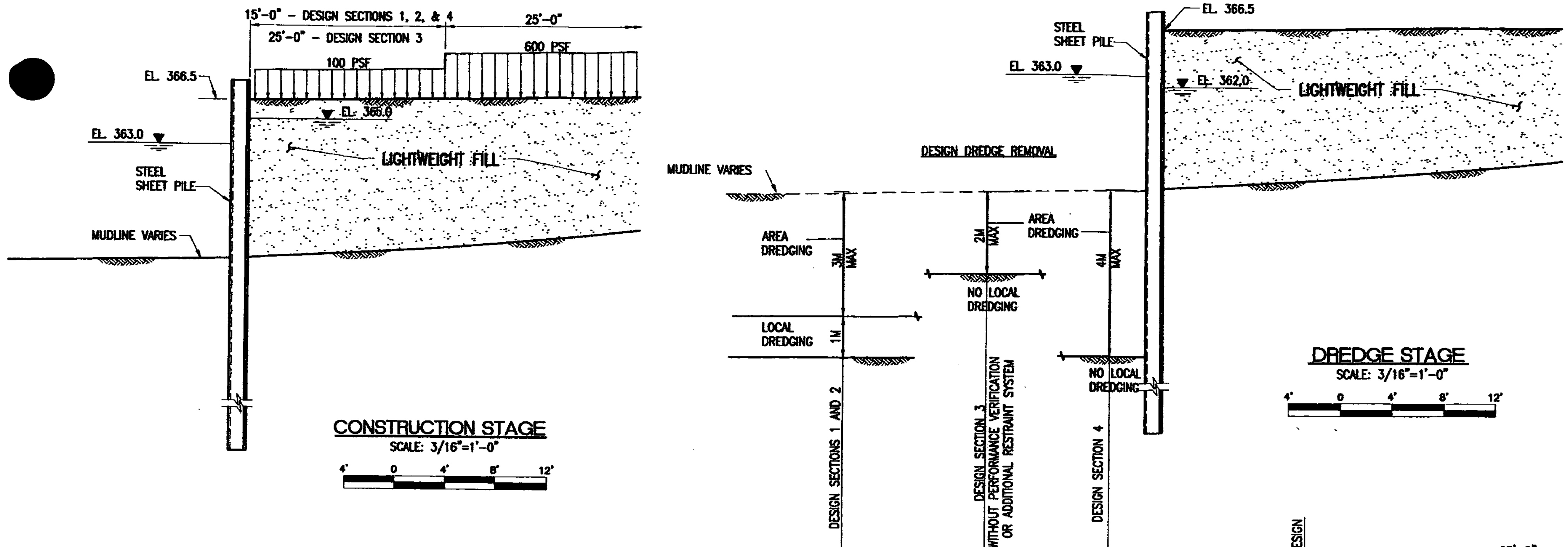
JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS NOTED

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK
DETAILS

Honeywell

DRAWN	DATE	CHK.	DATE
LY.	05-07-08	J.R.	05-07-08

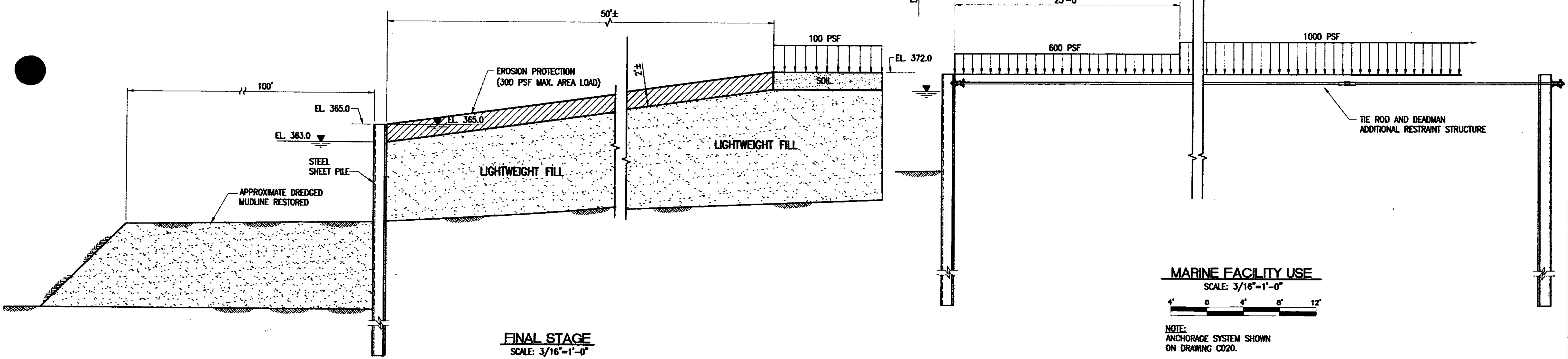
LOCATION
C018



NOTES:

1. DESIGN MAXIMUM ALLOWABLE DREDGE REMOVAL FOR BULKHEAD STRUCTURE PERFORMANCE.

   1.A AREA DREDGING – NO RESTRICTION
   1.B LOCAL DREDGING SHOULD BE SLOT DREDGED NO WIDER THAN 50 FEET IN FRONT OF BULKHEAD.



NOTE:
ANCHORAGE SYSTEM SHOWN ON DRAWING C020.

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

DRAWING IS HALF-SIZE IF PLOTTED 11x17

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO. ______
CONTRACTOR'S JOB NO. ______
SCALE: AS NOTED

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

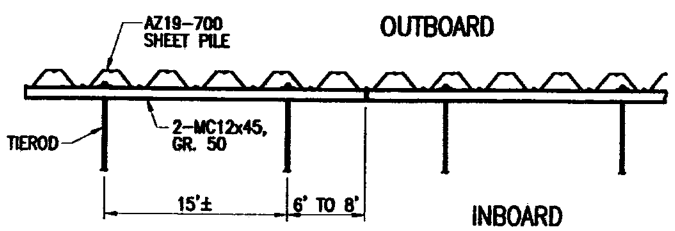
DESIGN CRITERIA

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

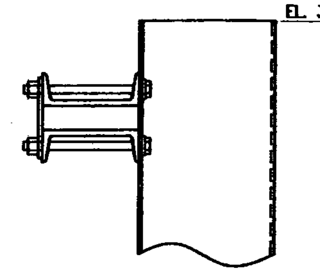
I.Y.	05-07-09	J.R.	05-07-09
DRAWN	DATE	CHK.	DATE

LOCATION | C019 | REV

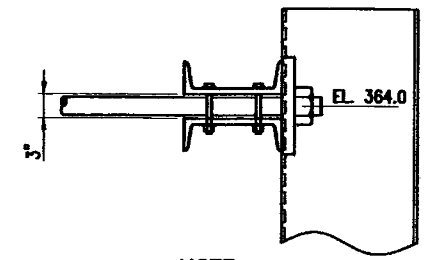
THIS WORK NOT IN CONTRACT



PART PLAN
SCALE=1/8"=1'-0"

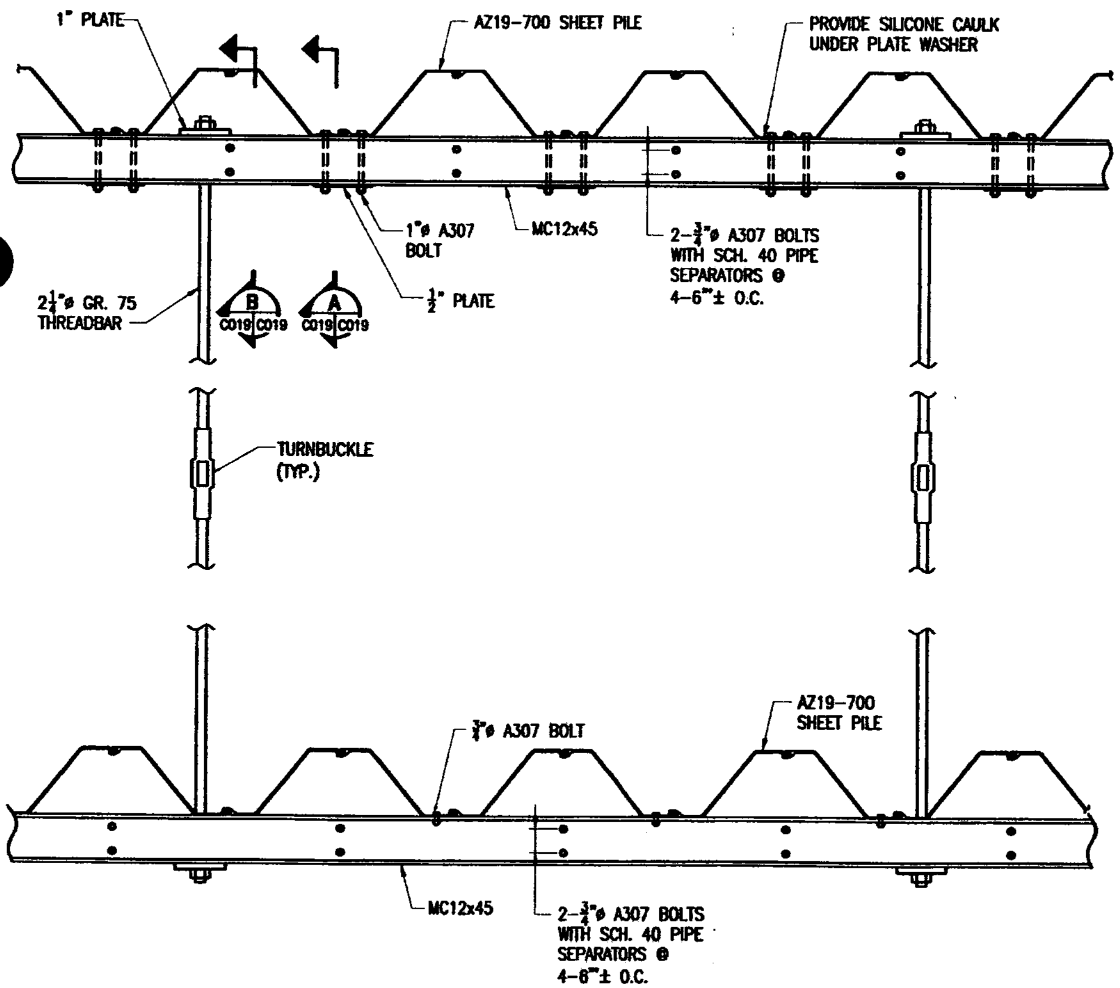


SECTION A C019 C019
SCALE: 1"=1'-0"

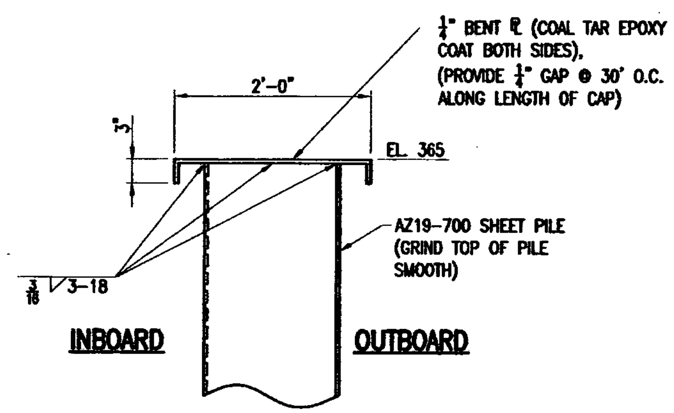


NOTE:
BENT PLATE SHEET PILE CAP NOT SHOWN.

SECTION B C019 C019
SCALE: 1"=1'-0"

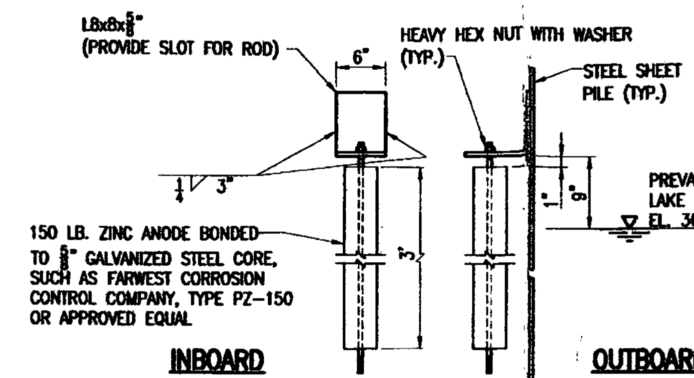


DETAIL PLAN
SCALE=1/2"=1'-0"

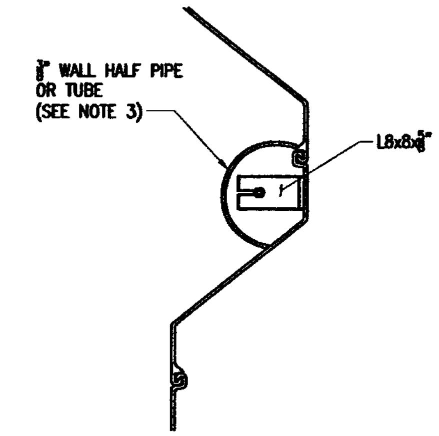


SHEET PILE CAP DETAIL
SCALE: 1"=1'-0"

NOTE: THE DEADMAN ANCHORAGE SYSTEM IS A TEMPORARY STRUCTURE NEEDED IN THE EVENT OF DESIGN SECTION 3 DREDGING DEEPER THAN 6 FEET AND IS NOT IN CONTRACT.



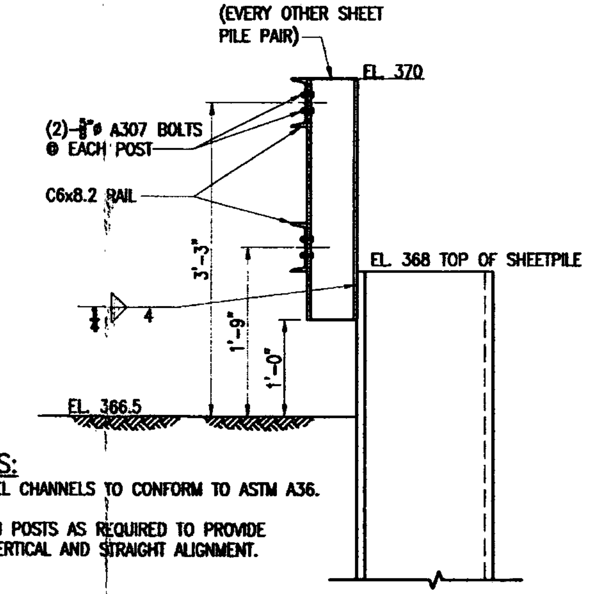
TYPICAL CATHODIC PROTECTION DETAIL
N.T.S.



PLAN
N.T.S.
TYPICAL

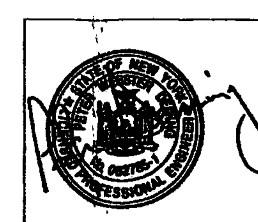
NOTES:

1. ZINC FOR GALVANIZED PROTECTION SHALL BE FEDERAL SPECIFICATION MIL-A-18001H MATERIAL OR EQUAL.
2. PROVIDE ONE ZINC ANODE @ 30' O.C., ON BOTH THE INBOARD AND OUTBOARD FACE OF THE SHEETING, STAGGERED
3. PROVIDE HALF ROUND PVC PIPE OR SQUARE TUBE WITH COVER TO PROTECT ANODE. DRILL 1-INCH HOLES AT 6-INCH SPACING EACH WAY TO PROVIDE FREE GROUNDWATER CONNECTIVITY



NOTES:
1. STEEL CHANNELS TO CONFORM TO ASTM A36.
2. SHIM POSTS AS REQUIRED TO PROVIDE A VERTICAL AND STRAIGHT ALIGNMENT.

TYPICAL GUARD RAIL SYSTEM



HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

DRAWING IS HALF-SIZE IF PLOTTED 11x17

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NOTICE
THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. S/N NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS SHOWN

Honeywell

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK
SHEET PILE WALL
MISCELLANEOUS DETAILS

AJM/LRC	05-07-09	AJL	05-07-09
DRAWN	DATE	CHK.	DATE

LOCATION
C020

GENERAL NOTES

1. ELEVATIONS SHOWN REFER TO USGS NGVD 1929 DATUM.
2. BASE PLANS OBTAINED FROM TOPOGRAPHIC MAP PREPARED BY LOCKWOOD MAPPING COMPANY OFF AERIAL PHOTOGRAPHS TAKEN APRIL 14, 2000. ACTUAL CONFIGURATION OF CAUSEWAY, SURFACE FEATURES, ETC. AT THE TIME OF CONSTRUCTION MAY DIFFER FROM THAT SHOWN ON THE DRAWINGS.
3. BORING LOCATIONS AND LOGS ARE AVAILABLE FROM THE OWNER FOR REVIEW AND INTERPRETATION.
4. THE CAUSEWAY MAY NOT BE USED TO SUPPORT CONSTRUCTION LIVE LOADS UNTIL REPAIRS ARE MADE. CONSTRUCTION EQUIPMENT WILL REQUIRE MATS OR FRAMING TO SPREAD LOADS TO THE CAUSEWAY FRAMING. ENGINEER WILL REVIEW THE CONTRACTOR'S PROPOSAL AND DETERMINE REQUIRED REPAIRS.
5. PROVIDE CONTAINMENT OF ALL MATERIAL DURING ALL REMOVAL AND DEMOLITION WORK. PREVENT ANY DEBRIS FROM ENTERING ONONDAGA LAKE.
6. CONTRACTOR IS FULLY RESPONSIBLE FOR ALL SITE SAFETY, INCLUDING BUT NOT LIMITED TO A SAFETY RAIL ALONG THE SHEET PILE WALL.

TECHNICAL REQUIREMENTS

A. STEEL SHEET PILES

1. STEEL SHEET PILES SHALL BE ARBED AZ19-700, ASTM A572, GRADE 50.
2. SHEET PILES SHALL BE PROVIDED:
   a. IN PAIRS, WITH THE CENTER INTERLOCK FULL LENGTH SEAL WELDED.
   b. WITH INTERLOCK SEALANT IN ONE INTERLOCK OF EACH PAIR.
   c. WITH THE BOTH OUTBOARD AND INBOARD FACES COAL TAR EPOXY COATED AS INDICATED IN THESE DRAWINGS.
3. FABRICATION
   a. SHEET PILE PAIRS SHALL BE SHOP SEAL WELDED IN A HORIZONTAL POSITION. WELDING PROCEDURES, INCLUDING ELECTRODE CLASSIFICATION AND REQUIRED PREHEAT TEMPERATURE, SHALL BE IN CONFORMANCE WITH AWS D1.1, LATEST EDITION. WELDERS AND WELDING OPERATORS SHALL BE QUALIFIED BY APPLICABLE TESTS AS DESCRIBED BY AWS D1.1.
   b. SEAL WELDS SHALL RECEIVE A 100% VISUAL EXAMINATION BY A QUALIFIED INSPECTOR RETAINED BY THE CONTRACTOR. THE INSPECTOR SHALL PROVIDE WRITTEN CERTIFICATION THAT ALL SEAL WELDS ARE IN CONFORMANCE WITH AWS D1.1 AND THE REQUIREMENTS OF THESE DRAWINGS.
   c. SHEET PILE PAIRS SHALL BE WELDED PRIOR TO APPLICATION OF COAL TAR EPOXY COATING.
4. THE VERTICALITY IN EACH PLANE OF THE SHEETPILES, SHALL NOT DEVIATE FROM THE PLUMB BY MORE THAN ONE PERCENT. PLAN LOCATION SHALL BE WITHIN 6 INCHES OF THEORETICAL.
   a. IF A PILE IS OUT OF LOCATION BEYOND 6 INCHES BUT LESS THAN 9 INCHES, SUBSEQUENT SHEET LOCATIONS SHALL BE ADJUSTED TO BRING THE ALIGNMENT BACK INTO TOLERANCE.
   b. IF A PILE IS OUT OF LOCATION BY MORE THAN 9 INCHES, IT SHALL BE EXTRACTED, RELOCATED AND REINSTALLED.
   c. IN NO CASE CAN A PILE BE INSTALLED INBOARD OF THE MAXIMUM THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER, REPRESENTED BY POINTS "A" THROUGH "P" ON THE PLANS.

   DURING THE SHEETPILE SETTING AND DRIVING, SURVEY LOCATIONS AND MEASURE VERTICALITY OF THE SHEETPILES TO CONFIRM TOLERANCES ARE BEING MET.
5. HANDLE STEEL SHEET PILING USING HANDLING HOLES OR LIFTING DEVICES. HANDLE STEEL SHEET PILES WITH CARE TO PREVENT DAMAGE. SUPPORT ON LEVEL BLOCKS OR RACKS SPACED NOT MORE THAN 10 FEET APART AND NOT MORE THAN 2 FEET FROM THE ENDS. SUPPORTS BETWEEN MULTIPLE LIFTS SHALL BE IN A VERTICAL PLANE. PROTECT STEEL SHEET PILING TO PREVENT DAMAGE TO COATINGS AND TO PREVENT CORROSION PRIOR TO INSTALLATION.
6. PILE HAMMER: USE A PILE IMPACT OR VIBRATORY HAMMER HAVING A CAPACITY SUITABLE FOR THE TOTAL WEIGHT OF THE PILE AND THE CHARACTER OF SUBSURFACE MATERIAL TO BE ENCOUNTERED. OPERATE HAMMER AT THE RATE(S) RECOMMENDED BY THE MANUFACTURER THROUGHOUT THE ENTIRE DRIVING PERIOD. REPAIR DAMAGE TO PILING CAUSED BY USE OF A PILE HAMMER.
7. DRIVE TEMPLATES: IT IS SUGGESTED THE CONTRACTOR PROVIDE TEMPLATE OR DRIVING FRAME SUITABLE FOR ALIGNING, SUPPORTING AND MAINTAINING SHEET PILING PLUMB IN THE CORRECT POSITION DURING SETTING AND DRIVING. USE A SYSTEM OF STRUCTURAL FRAMING SUFFICIENTLY RIGID TO RESIST LATERAL AND DRIVING FORCES AND TO ADEQUATELY SUPPORT THE SHEET PILING UNTIL DESIGN TIP ELEVATION IS ACHIEVED.
   a. TEMPLATES SHALL NOT MOVE WHEN SUPPORTING SHEET PILING. FIT TEMPLATES WITH WOOD BLOCKING TO BEAR AGAINST SHEET PILES AND HOLD THE SHEET PILE AT THE DESIGN LOCATION ALIGNMENT. PROVIDE OUTER TEMPLATE STRAPS OR OTHER RESTRAINTS AS NECESSARY TO PREVENT THE SHEETS FROM WARPING OR WANDERING FROM THE ALIGNMENT, OR RACKING ALONG THE ALIGNMENT.
   b. SHEET PILES COMPLETED AND DRIVEN TO FINAL TIP ELEVATION MAY BE WELDED TO ADJACENT COMPLETED SHEETS ABOVE EL. 365 IF REQUIRED TO LIMIT MOVEMENT OF COMPLETED SHEETS.
8. DRIVE SHEET PILES TO THE TIP ELEVATION(S) SHOWN ON THE CONTRACT DRAWINGS, OR DEEPER.
9. DO NOT DRIVE STEEL SHEET PILES UNTIL THE MUDLINE IS CLEAR OF DEBRIS AND OTHER MATERIALS HAVE BEEN REMOVED THAT MAY INTERFERE WITH STEEL SHEET PILE DRIVING. IF NECESSARY, PERFORM PRE-TRENCH EXCAVATION OR SPUD ALONG ALIGNMENT TO REMOVE SHALLOW OBSTRUCTIONS, RIP-RAP, ABANDONED PILES, ETC. REMOVE 72" AND 84" INTAKE PIPES AS DESCRIBED ELSEWHERE IN THIS DRAWING SET.
10. SPUDDING FOR OBSTRUCTIONS: SPUDDING FOR INSTALLATION OF SHEET PILES MAY BE USED. SPUDDING SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER. DISCONTINUE SPUDDING 5 FEET OR MORE ABOVE THE INDICATED TIP ELEVATIONS.
11. CUTTING AND SPLICING: PILES DRIVEN BELOW THE REQUIRED TIP ELEVATION AND PILES DAMAGED BY DRIVING AND CUT OFF TO PERMIT FURTHER DRIVING SHALL BE EXTENDED AS REQUIRED TO REACH THE TOP ELEVATION BY SPLICING AS APPROVED BY THE ENGINEER.
    a. ENDS OF PILES TO BE SPLICED SHALL BE SQUARED BEFORE SPLICING TO ELIMINATE DIPS OR CAMBER. SPLICE PILES WITH CONCENTRIC ALIGNMENT OF THE INTERLOCKS SO THAT THERE ARE NO DISCONTINUITIES, DIPS OR CAMBER AT THE ABUTTING INTERLOCKS.
    b. SPLICED PILES SHALL BE FREE SLIDING AND ABLE TO OBTAIN THE MAXIMUM SWING WITH CONTIGUOUS PILES.
    c. SPLICES SHALL DEVELOP THE FULL STRUCTURAL STRENGTH OF THE MEMBER AND SHALL BE FREE OF HOLES OR OTHER LEAKAGE OPENING.
12. WELDING: SHOP AND FIELD WELDING FOR SPLICING, SEAL WELDS AND OTHER CONDITIONS, QUALIFICATION OF WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS SHALL BE IN ACCORDANCE WITH AWS D1.1.
13. REMOVE AND REPLACE STEEL SHEET PILES FOUND TO BE OUT OF INTERLOCK, OUT OF TOLERANCE, DAMAGED OR OTHERWISE DEFICIENT AT NO ADDITIONAL COST TO THE OWNER.
14. PERFORM CONTINUOUS INSPECTION DURING SHEET PILE DRIVING. INSPECT ALL STEEL SHEET PILES FOR COMPLIANCE WITH TOLERANCE REQUIREMENTS. BRING ANY UNUSUAL PROBLEMS THAT MAY OCCUR TO THE ATTENTION OF THE ENGINEER.
15. MAINTAIN A PILE DRIVING RECORD FOR EACH SHEET PILE. INDICATE ON THE INSTALLATION RECORD INSTALLATION DATES AND TIMES, TYPE AND SIZE OF HAMMER, RATE OF OPERATION, TOTAL DRIVING TIME, DIMENSIONS OF DRIVING HELMET AND CAP USED, BLOWS REQUIRED PER FOOT FOR EACH FOOT OF PENETRATION, PILE LOCATIONS, PILE PLUMBNESS, TIP ELEVATIONS, GROUND ELEVATIONS, CUT-OFF ELEVATIONS, AND ANY REHEADING OR CUTTING OF SHEET PILES.
    RECORD ANY UNUSUAL SHEET PILE DRIVING PROBLEMS DURING DRIVING.
16. ANY HOLES IN THE SHEETS (LIFTING HOLES, ETC) BELOW ELEV. +365 SHALL BE COVERED WITH PLATE STEEL, SEAL WELDED AND COATED.
17. SUBMIT FOR REVIEW AND APPROVAL:
    a. COMPLETE DESCRIPTION, DRAWINGS AND DETAILS FOR THE PROPOSED TEMPLATE OR OTHER PROPOSED METHOD OF INSTALLING THE SHEETPILES WITHIN THE REQUIRED TOLERANCES.
    b. PROPOSED SEQUENCE OF INSTALLATION.
    c. COMPLETE DESCRIPTION OF ALL INSTALLATION EQUIPMENT AND APPURTENANCES. INCLUDING ANY PROPOSAL FOR LOADS ON THE CAUSEWAY.
    d. PILE DRIVING RECORDS.
    e. A SURVEYED RECORD DRAWING OF THE SHEET PILE ALIGNMENT INCLUDING COORDINATES OF TURNING POINTS, TIP ELEVATIONS AND DEVIATIONS FROM THEORETICAL LOCATIONS, ORIENTATIONS OR DIMENSIONS.
18. COAL TAR EPOXY COATING REQUIREMENTS:
    a. COAT STEEL SHEET PILES, CONNECTOR PILES AND FABRICATED CONNECTOR PILES WITH TWO COATS, 8 MILS DRY FILM THICKNESS (DFT)EACH, COAL TAR EPOXY. COATING SHALL EXTEND FROM THE LIMITS SHOWN, FOR OUTBOARD AND INBOARD FACE OF THE SHEET PILES.
    b. COAL TAR EPOXY COATING SHALL BE "BITUMASTIC NO. 300-M" AS MANUFACTURED BY CARBOLINE OR APPROVED EQUAL.
    c. ALL SURFACES TO BE COATED SHALL BE SAND-BLASTED IN PREPARATION FOR APPLICATION OF THE COATING. SAND-BLASTING SHALL BE TO NEAR WHITE METAL, AT LEAST EQUIVALENT TO A COMMERCIAL BLAST AS DEFINED BY SSPC-SP-10. ALL SURFACES TO BE COATED MUST BE COMPLETELY DRY, FREE OF MOISTURE, SOIL, DUST AND GRIT AT THE TIME THE COATING IS APPLIED.
    d. APPLICATION OF THE COATINGS AND CURING REQUIREMENTS SHALL BE IN CONFORMANCE WITH THE MANUFACTURER'S REQUIREMENTS.
    e. WHERE WELDING, FASTENINGS OR OTHER WORK ARE TO BE ACCOMPLISHED AFTER INSTALLATION OF PILES, FIELD APPLIED PROTECTIVE COATS SHALL BE MADE AFTER SAME IS COMPLETED.
    f. THE CONTRACTOR SHALL APPOINT AND PAY FOR AN INDEPENDENT INSPECTION AND TESTING AGENCY, APPROVED BY THE ENGINEER, TO INSPECT AND CERTIFY THE COATING PROCEDURE AS FOLLOWS:
       - CERTIFY THAT THE STEEL HAS BEEN PREPARED FOR COATING IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATIONS AND ADDITIONAL REQUIREMENTS NOTED HEREIN.
       - CERTIFY THE THICKNESSES OF THE TWO EPOXY COATS AND THAT EACH COAT IS APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND TO THE DRY FILM THICKNESSES SPECIFIED.

B. SEALED INTERLOCK SHEET PILE

1. MATERIALS
   a. SEALANT SHALL BE SWELLSEAL GUNGRADE WA, HYDROPHILIC POLYURETHANE WATERSTOP, MANUFACTURED BY DENEEF CONSTRUCTION CHEMICALS, HOUSTON, TX. SEALANT SHALL BE INSTALLED USING THE DRY CURE METHOD, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, OR BELOW, WHICHEVER IS MORE STRINGENT.
   b. PROVIDE DENEEF TECHNICAL REPRESENTATIVE SITE VISIT TO REVIEW APPLICATION AND PRODUCT AT BEGINNING OF PRODUCTION WORK.
2. SEALANT APPLICATION
   a. STEEL SURFACE AND INTERLOCK VOID TO RECEIVE SEALANT SHALL BE FREE OF OIL, MOISTURE, SOIL, METAL SHAVINGS, OR OTHER CONTAMINANT.
   b. STEEL SURFACE TEMPERATURE SHALL BE ABOVE 45°F FOR 24 HOURS PRIOR AND 48 HOURS AFTER SEALANT APPLICATION.
   c. SEALANT SHALL BE PLACED IN THE PROTECTED CORNER OF THE INTERLOCK (RATE = ONE VOLUMETRIC OUNCE PER LINEAL FOOT) AND TOOLED TO A UNIFORM BEAD. THE TOOL SHALL BE CLEANED OF EXCESS SEALANT MATERIAL AFTER EACH INTERLOCK APPLICATION.
   d. SEALANT SHALL BE APPLIED AT A RATE AS DETERMINED BY THE ENGINEER ON THE BASIS OF THE MOCK UP JOINTS. APPLICATION RATES SHALL BE DOCUMENTED FOR EACH TUBE OF SEALANT APPLIED. CERTIFY THE PROPER AMOUNT OF SEALANT HAS BEEN APPLIED BEFORE DRIVING SHEETS.
   e. SEALANT SHALL BE ALLOWED TO AIR DRY CURE AT LEAST 24 HOURS PRIOR TO INSTALLATION.
   f. AFTER AIR DRYING, INTERLOCKS WITH SEALANT APPLIED SHALL BE COVERED DURING STORAGE AND TRANSPORT; COVER SHALL REMAIN IN PLACE UNTIL THE PILE IS LIFTED FOR PLACEMENT. STACK SHEETS SO WATER IS UNABLE TO PUDDLE WITHIN INTERLOCK. SHEETS SHALL REMAIN IN THIS ORIENTATION UNTIL LIFTED FOR PLACEMENT.
   g. IF SEALANT SWELLS BEFORE SHEET PILE IS PLACED, COVER AND DRY TO PERMIT SHRINKAGE, OR REPLACE WITH NEW, AND PLACE SHEETING WITH WET DRIVE METHOD.
3. SHEET PILE INSTALLATION
   a. THE BOTTOM OF EACH CLEAR INTERLOCK SHALL BE PLUGGED TO PREVENT SOIL ENTRY DURING DRIVING. INTERLOCK PLUG SHALL BE TIGHT FITTING AND SECURED IN PLACE TO PREVENT LOSS DURING HANDLING AND PLACEMENT. IF THE INTERLOCK PLUG IS LONGER THAN 2", IT SHALL BE KNOCKED OUT / DISPLACED BY ADJACENT SHEET.
   b. ANY SHEET PILE WITH INTERLOCK SEALANT APPLIED SHALL BE PLACED AND DRIVEN TO FINAL TIP ELEVATION WITHIN AN 8 HOUR PERIOD FROM THE TIME IT IS IN CONTACT WITH THE WATER.
   c. SHEETS WITH SEALANT APPLIED WHICH ARE NOT DRIVEN TO FINAL TIP WITHIN 8 HOURS SHALL BE REMOVED AND REPLACED WITH NEW SEALANT APPLIED.
   d. SHEETS REMOVED DUE TO 8 HOUR SEALANT LIMIT SHALL BE USED IN A LOCATION WHERE SEALANT IS NOT REQUIRED, OR THE SEALANT SHALL BE REMOVED BY SCRAPING AND REPLACED WITH NEW SEALANT APPLIED.
4. CONTRACTOR SUBMITTALS AND MOCK SEALED INTERLOCK JOINTS
   a. SUBMIT SHOP DRAWING, DETAILS, AND NOTES DEPICTING METHODS TO BE EMPLOYED TO CONSTRUCT A CONTINUOUS HYDRAULIC BARRIER INCLUDING SHEET PILE PLACEMENT AND DRIVING SEQUENCE, IDENTIFICATION OF SHEETS, LOCATION OF PLANNED/POTENTIAL INTERMEDIATE TERMINATIONS IN SEALED INTERLOCK SHEETS. NOTES SHALL ADDRESS SEALANT APPLICATION, STORAGE, HANDLING, DRIVING PROCEDURE AND SEQUENCE OF SHEET PLACEMENT.
   b. MOCK JOINTS: PREPARE THREE SEPARATE 3 FT LONG MOCK UP JOINTS TO DEMONSTRATE INTERLOCK PREPARATION, SEALANT APPLICATION AND TOOLING, PILE ASSEMBLY, AND SEALANT SWELL. ONE MOCK JOINT SHALL HAVE INTERLOCK PLUG APPLIED. SUBMERGE SHEETS IN WATER BATH, TO CONFIRM TOOLING, APPLICATION RATE AND SWELL SEAL. OWNER WILL EXAMINE MOCK JOINTS AT EACH PREPARATION STEP.
   c. SUBMIT QUANTITY COUNTS OF SEALANT TUBES USED PER SHEET PILE INTERLOCK TO CONFIRM APPLICATION RATE.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE
–	–	–	–				–								

REFERENCE	DWG. NO.	APPROVALS	DATE

EQUIPMENT P.O. B/M NUMBERS:

JOB NO. ______
CONTRACTOR'S JOB NO. ______
SCALE: N.T.S.

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

GENERAL NOTES & REQUIREMENTS

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

E.C.	05-07-08	J.R.	05-07-08
DRAWN	DATE	CHK.	DATE

LOCATION | C021 | REV

C. CONSTRUCTION SURVEY

1. PROVIDE SURVEY DRAWING SEALED BY A LICENSED SURVEYOR, INDICATING LOCATION AND ELEVATION OF LAND SURVEY BENCHMARKS AND CONTROL POINTS.
2. ALL LOCATION SURVEYS, BENCHMARK, AND BASELINE SURVEYS SHALL BE PERFORMED BY A LICENSED SURVEYOR. ELEVATION MONITORING SURVEYS MAY BE PERFORMED BY A QUALIFIED TECHNICIAN UNDER THE DIRECTION AND REVIEW OF A LICENSED SURVEYOR.
3. SURVEY THE LOCATION AND ELEVATION OF THE TOP OF THE SHEET PILE WALL AT 50 FT O.C. MAX. SPACING. SURVEY POINTS SHALL BE PRISMS. PERFORM BASELINE SURVEY BEFORE PLACING FILL.
4. SURVEY (BASELINE AND MONITOR) DMP TARGETS, AT SCHEDULE SPECIFIED IN INSTRUMENTATION DRAWINGS.
5. SUBMIT OPTICAL SURVEY DATA (LOCATION, ELEVATION, AND MOVEMENT FROM BASELINE) WITHIN ONE WORK DAY AFTER SURVEY.

D. FILL PLACEMENT

1. CONSTRUCTION SEQUENCE
   a. PLACE AND ANCHOR REINFORCING GEOTEXTILE TYPE A OVER MUDLINE IN ADVANCE OF FILL PLACEMENT.
   b. ENCLOSE SHEET PILE DRIVING AND FILL PLACEMENT IN FLOATING SILT CURTAIN.
   c. PLACE LIGHTWEIGHT FILL TO ELEV. +365.
   d. WHERE LIGHTWEIGHT FILL EXTENDS BELOW ELEV. +357, DENSIFY FILL WITH VIBRTORY PROBES.
   e. PLACE LIGHTWEIGHT FILL IN CONTROLLED LIFTS (WITH COMPACTION) TO WORK PLATFORM SUBGRADE.
   f. PLACE WORK PLATFORM FILL; PITCH FOR DRAINAGE, AND CUT SHEET PILES FOR STORMWATER RELEASE.
   g. SURVEY BULKHEAD DURING FILL PLACEMENT. PLACE INSTRUMENTATION AND PERFORM BASELINE SURVEYS AS CONSTRUCTION PROGRESSES.
2. REINFORCING GEOTEXTILE TYPE A
   a. JOINTS PARALLEL TO THE SHORELINE SHALL BE SEWN; JOINTS PERPENDICULAR TO THE SHORELINE MAY BE CONSTRUCTED WITH AN OVERLAP.
   b. OVERLAP JOINTS SHALL BE 5 FT OR WIDER. OVERLAP JOINTS SHALL BE PINNED IN PLACE AND ANCHORED TO MAINTAIN TENSION IN THE GEOTEXTILE AND TO MAINTAIN BOTTOM COVERAGE WHEN FILLING.
   c. PLACE SEWN PANELS SIZED TO EACH COVERAGE AREA AND OVERLAP JOINT. CONTRACTOR SHALL DETERMINE WIDTH OF SEWN PANELS.
   d. CONTRACTOR SHALL LAY OUT GEOTEXTILE A PANELS AND DETERMINE SHEET PLACEMENT METHODS. SEE "SUBMITTALS."
   e. SHORELINE EDGE OF ANY PANEL SHALL BE ANCHORED BEFORE PLACING FILL ON THE PANEL.
   f. PLACE TAG LINES WITH FLOATS AT SUBMERGED EDGES OF EACH PANEL TO INDICATE EDGE LOCATION.
   g. MARK POSITION OF PANEL AFTER PLACEMENT AND OBSERVE CHANGES AS FILL IS PLACED. LOCATE SUBSEQUENT PANEL TO MAINTAIN MINIMUM 5 FT OVERLAP WIDTH.
3. LIGHTWEIGHT FILL
   a. PLACE LIGHTWEIGHT FILL WITH LOW PRESSURE DOZER EQUIPMENT (100 PSF MAXIMUM BEARING PRESSURE) TO ELEV. +365.
   b. OUTBOARD OF CAUSEWAY, PROHIBIT TRUCK TRAFFIC WITHIN 15 FT OF SHEET PILE BULKHEAD. EAST OF CAUSEWAY, PROHIBIT TRUCK TRAFFIC WITHIN 25 FT OF BULKHEAD.
   c. SOUND MUDLINE AT TOE OF ACTIVE FILL SLOPE EVERY 20 FT OF ADVANCE. CONTROL FILL SLOPE BELOW WATER, AND PLACE FILL BEYOND MUDWAVE TO ENCAPSULATE AND TRAP MUDWAVES.
   d. PROVIDE 15 ROLLS OF 13 FT. WIDE TENSAR Bx1200 GEOGRID ON SITE AS CONTINGENCY FOR MUDWAVE ABATEMENT.
4. LIGHTWEIGHT FILL DENSIFICATION
   a. DENSIFY FILL WITH VIBRATORY PROBES WHERE LIGHTWEIGHT FILL EXTENDS BELOW ELEV. +357.
   b. VIBRATORY PROBES SHALL BE PERFORMED AT 5 FT SPACING OVER THE ENTIRE FILL SURFACE BEFORE PREPARATION OF LIGHTWEIGHT FILL SUBGRADE FOR WORK PLATFORM.
   c. A VIBRATORY PROBE IS DEFINED AS VIBRATORY HAMMER DRIVING AN H-PILE THROUGH LIGHTWEIGHT FILL TO PROBE DEPTH; HOLDING THE H-PILE AT THE PROBE DEPTH WITH THE HAMMER OPERATING FOR 90 SECONDS; AND EXTRACTING THE H-PILE TO THE SURFACE WITH THE HAMMER OPERATING.
   d. MARK EACH PROBE LOCATION WITH A STAKE.
   e. AT EACH PROBE, DETERMINE DEPTH TO GEOTEXTILE A - ESTIMATED PROBE DEPTH SHALL BE 2 FT ABOVE GEOTEXTILE A;
   f. PROHIBIT PROBE PENETRATION THROUGH GEOTEXTILE A.
   g. PROBES SHALL NOT BE CLOSER THAN 3 FT FROM THE SHEET PILE BULKHEAD OR THE CAUSEWAY GIRDER.
   h. PROBES WITHIN 25 FT OF THE BULKHEAD SHALL BE ADVANCED FROM THE BULKHEAD TOWARDS THE SHORELINE.
   i. IF FILL IS NOT CONTAINED BY SHEET PILE OR THE SHORELINE, THE PROBES SHALL BE 10 FT OR MORE INBOARD OF ANY EXPOSED FACE.
   j. AFTER COMPLETION OF VIBRATORY PROBES IN ANY AREA, ADD LIGHTWEIGHT FILL AND RE-GRADE TO RESTORE ELEV. +365+ .
5. WORK PLATFORM
   a. PROOF ROLL LIGHTWEIGHT FILL AT ELEV. +365+ .
   b. PLACE TWO CONTROLLED LIFTS OF LIGHTWEIGHT FILL BELOW GEOTEXTILE B. CONTROLLED LIGHTWEIGHT FILL SHALL OBTAIN 98 % MAXIMUM DRY UNIT WEIGHT (ASTM D 698 SATURATED SURFACE DRY).PERFORM SAND CONE TEST (OR NUCLEAR DENSITY TEST IF APPROVED) TO DEMONSTRATE COMPACTION FOR EACH LIFT (ONE TEST EACH 20,000 SQUARE FEET OF SURFACE AREA) OR CALIBRATE AND COUNT ROLLER PASSES AS APPROVED BY THE ENGINEER.
   c. SHAPE SUBGRADE AT ELEV. 366+ BELOW WORK PLATFORM OR ADJUST WORK PLATFORM SURFACE FOR DRAINAGE TO LAKE.
   d. PLACE GEOTEXTILE B OVER COMPACTED LIGHTWEIGHT FILL OR ADJUST WORK PLATFORM SURFACE. JOINTS PARALLEL TO THE SHORELINE SHALL BE SEWN; JOINTS PERPENDICULAR TO THE SHORELINE MAY BE CONSTRUCTED WITH A 2 FT OVERLAP.
   e. WITHIN 15 FT OF CAUSEWAY GIRDER, LIGHTWEIGHT FILL AND WORK PLATFORM FILL ABOVE THE BOTTOM OF THE CAUSEWAY GIRDER SHALL BE PLACED IN 1 FT MAXIMUM LIFTS WRAPPED IN GEOTEXTILE B TO PREVENT LATERAL LOADS ON GIRDER.
   f. PLACE WORK PLATFORM SURFACE IN TWO CONTROLLED LIFTS COMPACTED TO 98 % MAXIMUM DRY UNIT WEIGHT (ASTM D 698). PERFORM SAND CONE TEST TO DEMONSTRATE COMPACTION (ONE TEST EACH 10,000 SQUARE FEET OF SURFACE AREA).
   g. AFTER PLACING WORK PLATFORM AT ELEV. +367+:
      1) OUTBOARD OF CAUSEWAY, PLACE FENCE OR OTHER BARRICADE TO EXCLUDE TRUCK TRAFFIC WITHIN 15 FT OF BULKHEAD.
      2) EAST OF CAUSEWAY, PLACE FENCE OR OTHER BARRICADE TO EXCLUDE TRUCK TRAFFIC WITHIN 25 FT OF BULKHEAD.
      3) PLACE CONCRETE "JERSEY BARRIERS" TO PROTECT EACH INSTRUMENT LOCATION.
6. SUBMITTALS

   SUBMIT 20 WORK DAYS PRIOR TO PLACING FILL:
   a. SUBMIT SHOP DRAWINGS FOR GEOTEXTILE A PANEL LAYOUT, AND A WORK PLAN FOR GEOTEXTILE A, COVERING: GEOTEXTILE ASSEMBLY, LAYOUT, FIELD PLACEMENT, FIELD JOINTS, AND LOCATION CONTROL.
   b. SUBMIT WORK PLAN FOR FILL PLACEMENT, ADDRESSING: MUDLINE MONITORING, AND FILL PLACEMENT. INDICATE CONTINGENCY FILL PLACEMENT TO CONTROL MUDWAVE PROPAGATION. PROVIDE SPECIFICATIONS OF EQUIPMENT WHICH WILL BE USED TO PLACE AND COMPACT LIGHTWEIGHT FILL.

   RECORD DRAWINGS, SUBMITTED MONTHLY AS PROGRESS REPORTS:
   c. RECORD DRAWING ILLUSTRATING AS-BUILT LOCATION OF VIBRATORY PROBES, GIVING PROBE DATE AND DEPTH, TO DOCUMENT VIBRATORY PROBES WERE PERFORMED OVER THE ENTIRE SURFACE OF THE FILL AT 5 FT MAXIMUM SPACING.
   d. SUBMIT MATERIAL TEST DATA FOR LIGHTWEIGHT FILL. PROVIDE MANUFACTURER CERTIFICATION OF MATERIAL SPECIFIC GRAVITY, UNIT WEIGHT AND GRADATION PROPERTIES FOR EACH 2,000 TONS OF MATERIALS DELIVERED.
   e. SUBMIT MATERIAL TEST DATA FOR WORK PLATFORM SURFACE FILL.
7. MATERIALS
   a. REINFORCING GEOTEXTILE A SHALL BE BIAXIAL MIRAFI HP-370 OR EQUAL. SEWN JOINTS SHALL DEVELOP TENSILE CAPACITY OF THE GEOTEXTILE AT 5% STRAIN.
   b. REINFORCING GEOTEXTILE B SHALL BE BIAXIAL MIRAFI HP-370 OR EQUAL.
   c. LIGHTWEIGHT FILL SHALL BE COARSE EXPANDED SHALE AGGREGATE HAVING A SPECIFIC GRAVITY OF 1.5 +0.05 AND A TOTAL WEIGHT NO GREATER THAN 68 LBS/CF "SATURATED SURFACE DRY" WHEN COMPACTED IN ACCORDANCE WITH ASTM D 698 (STANDARD PROCTOR COMPACTION EFFORT). LIGHTWEIGHT FILL SUPPLIER SHALL PROVIDE TESTING AND CERTIFICATION OF SPECIFIED MATERIAL PROPERTIES.
   d. STRUCTURAL FILL FOR WORK PLATFORM SHALL BE STONE, SAND AND GRAVEL IN CONFORMANCE WITH NYSDOT SECTION 304 OPTION D, TYPE 4 SUBBASE COURSE, INCLUDING REQUIREMENTS FOR MATERIAL, PLACEMENT AND COMPACTION.
   e. CONTROLLED LOW STRENGTH MATERIAL (CLSM) SHALL BE IN CONFORMANCE WITH NYSDOT SECTION 204, NO FLYASH.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA - 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE:

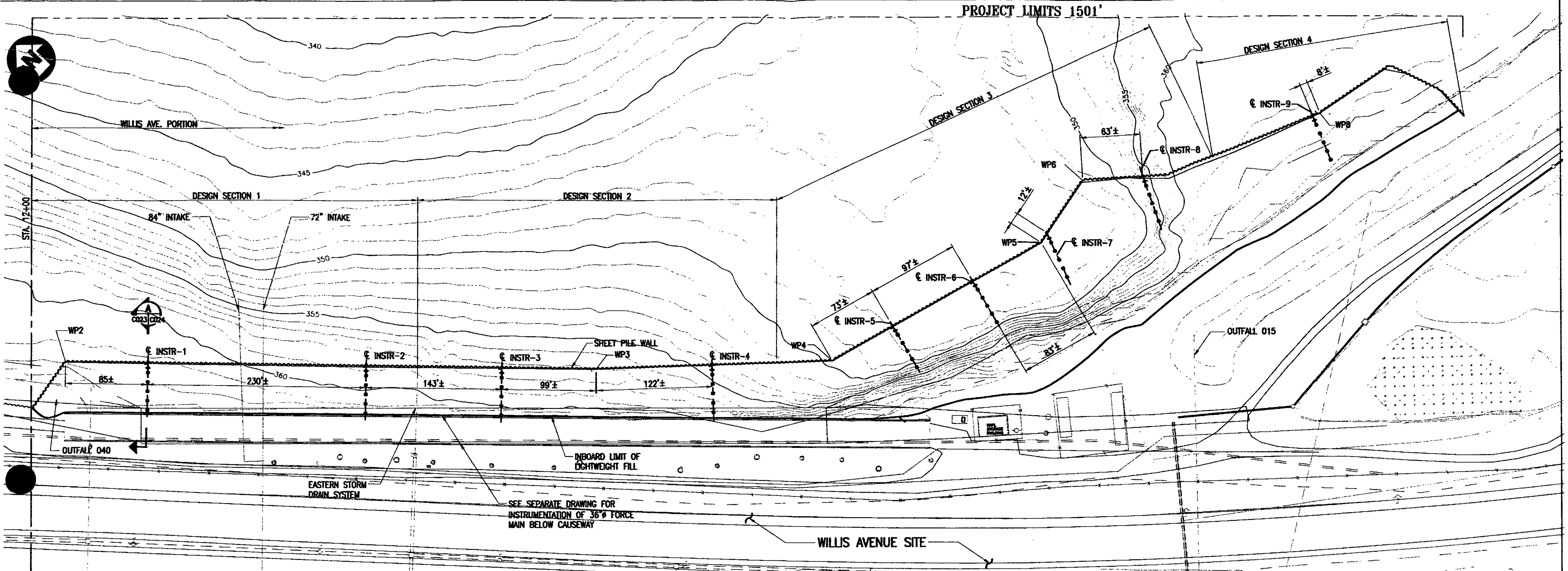
WILLIS AVE./SEMET TAR BEDS SITES RM
SYRACUSE, NEW YORK

GENERAL NOTES & REQUIREMENTS

Honeywell
DMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
E.C.	08-07-08	J.R.	08-07-08

LOCATION | C022 | REV



PLAN

50 25 0 50 100

SCALE: 1"=50'

INSTRUMENTATION GENERAL NOTES:

1. NINE INSTRUMENT CLUSTERS ARE PLANNED. EACH CLUSTER INCLUDES THE FOLLOWING INSTRUMENTS:

A. 1 SHEET PILE WALL INCLINOMETER

B. 1 DEFORMATION MONITORING POINT (DMP) CONSISTING OF A REFLECTIVE PRISM MOUNTED ON AN L-BRACKET.

C. 1 TILTMETER

D. BOREHOLE INSTRUMENTS:

1) 1 INCLINOMETER

2) 1 BOREHOLE EXTENSOMETER

3) 4 VIBRATING WIRE PIEZOMETERS

E. 5 SETTLEMENT PLATES

F. IN ADDITION, DEFORMATION MONITORING POINTS SHALL BE PLACED AT MAXIMUM 50 FT SPACING ALONG THE ALIGNMENT.

2. INSTRUMENT CABLES FROM EACH CLUSTER WILL BE GROUPED USING CONDUIT AND JUNCTIONS BOXES, AND CONNECTED TO DATA LOGGERS AT TWO LOCATIONS SELECTED BY THE INSTRUMENTATION CONTRACTOR. IN THE COMPLETED SYSTEM POWER WILL BE PROVIDED BY SOLAR PANEL. REMOTE DATA ACQUISITION WILL BE BY MODEM.

[illegible]STRUMENTS SHALL BE INSTALLED AS SOON AS PRACTICAL IN THE CONSTRUCTION SEQUENCE.

4. THE INSTRUMENTATION CONTRACTOR SHALL:

A. PROVIDE INSTRUMENTS.

B. PROVIDE TECHNICAL SUPPORT AND INSPECTION OF INSTRUMENT INSTALLATIONS BY THE BULKHEAD CONTRACTOR.

C. PROVIDE DRILLING CREW, RIG, AND SUPPLIES FOR BOREHOLE INSTRUMENT INSTALLATIONS.

D. INSTALL, ASSEMBLE, CONNECT, AND MAINTAIN INSTRUMENTS.

E. VERIFY EQUIPMENT FUNCTION, COLLECT AND SUMMARIZE DATA.

5. THE BULKHEAD CONTRACTOR SHALL:

A. PROVIDE EQUIPMENT SUPPLIES AND LABOR SUPPORT.

B. PROTECT EQUIPMENT INSTALLATIONS WITH CONCRETE BARRIERS AND REPAIR OR REPLACE INSTRUMENT OR INSTRUMENT COMPONENTS DAMAGED AS A RESULT OF BULKHEAD CONSTRUCTION OR FILLING OPERATIONS.

C. SUBMIT DETAILS OF SUPPLIES AND INSTALLATION WORK TO BE PERFORMED IF DIFFERENT FROM DETAILS PROVIDED ON THE CONTRACT DRAWINGS.

D. INCLUDE INSTALLATION OF EACH INSTRUMENT CLUSTER ON CONSTRUCTION SCHEDULE SUBMITTALS.

6. PROVIDE ALL LAND SURVEY BY A LICENSED SURVEYOR FOR INSTRUMENT LOCATION (X, Y, Z) DURING CONSTRUCTION, AND SURVEY INSTRUMENT LOCATIONS EIGHT TIMES (THREE MONTH INTERVALS) AFTER COMPLETING ENTIRE WORK PLATFORM TO ELEV. +367. SURVEY IN ACCORDANCE WITH NOTES ON DRAWING C022.

LEGEND

℄ INSTR-1

– INSTRUMENTATION CLUSTER ENLARGED PLAN SEE DWG. C024 (TYPICAL)

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

STATE OF NEW YORK · PETER WEBSTER DEMING · No. 062785-1 · LICENSED PROFESSIONAL ENGINEER

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NOTICE

THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.
–	–	–	–				–										

APPROVALS | DATE

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.

CONTRACTOR'S JOB NO.

SCALE: 1"=50'-0"

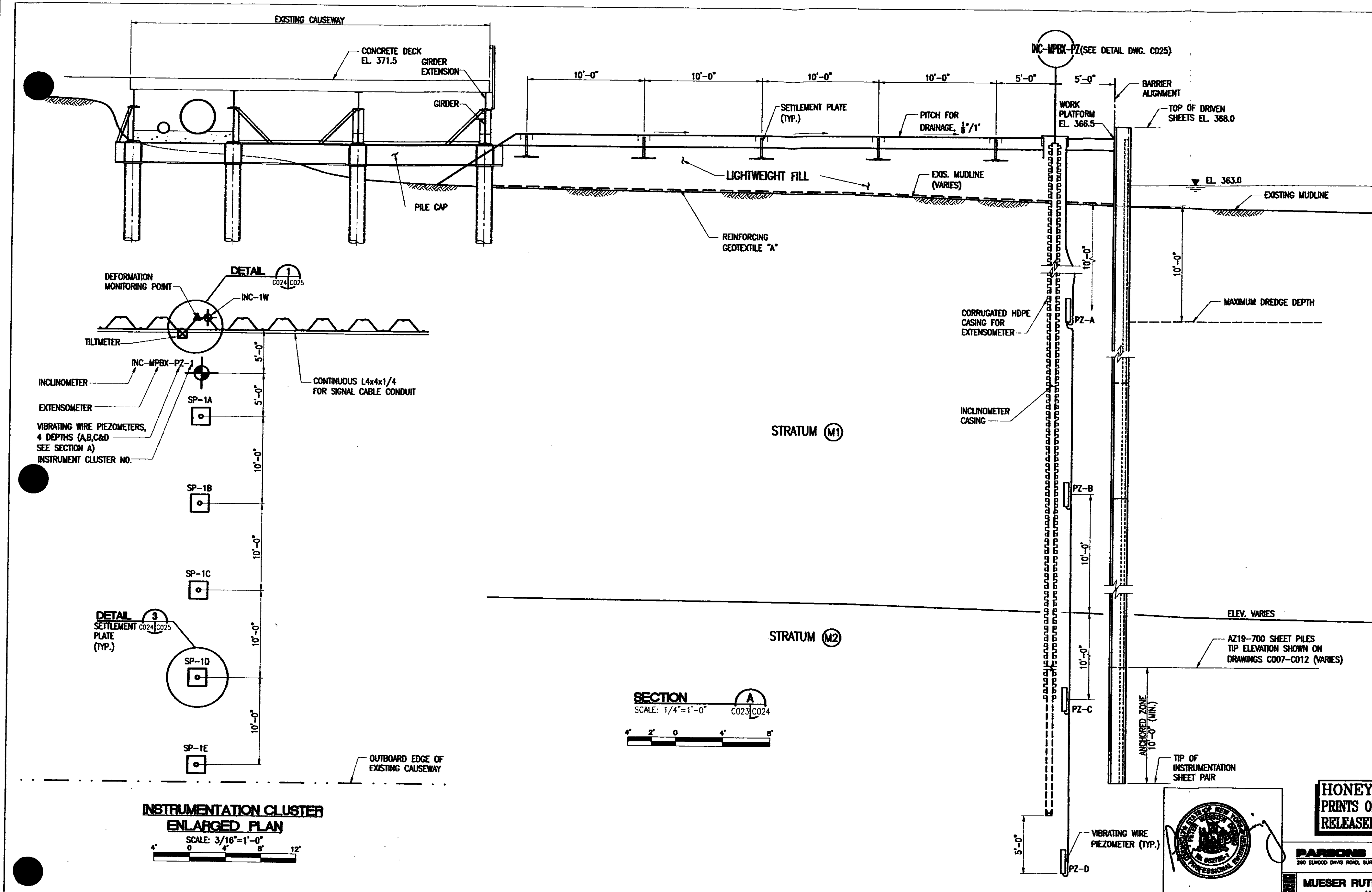
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

INSTRUMENTATION PLAN AND NOTES

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

E.C.	02-08-08	J.L.K.	02-08-08
DRAWN	DATE	CHK.	DATE

LOCATION | C023 | REV



DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NOTICE

THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE
–	–	–	–				–

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE

REFERENCE	DWG. NO.

APPROVALS	DATE
EQUIPMENT P.O. B/M NUMBERS:	

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS SHOWN

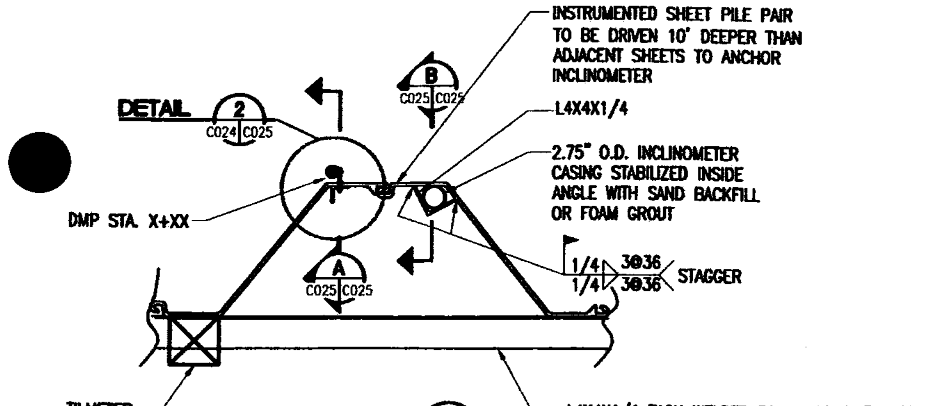
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

INSTRUMENTATION PARTIAL PLAN AND SECTION

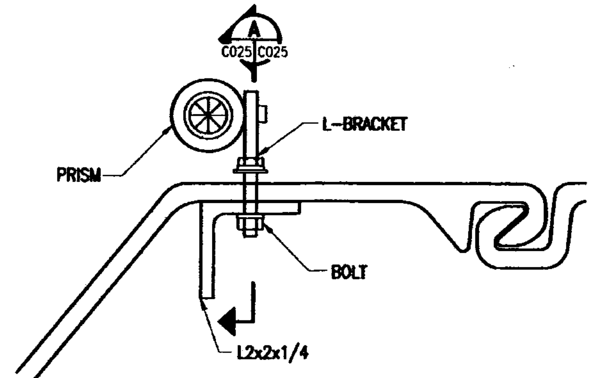
Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

E.C.		J.L.V.	
DRAWN	DATE	CHK.	DATE

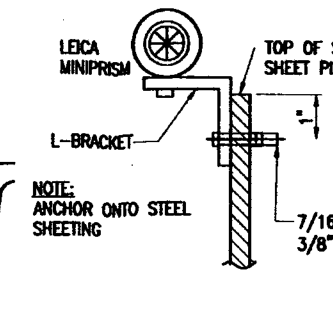
LOCATION
C024
REV



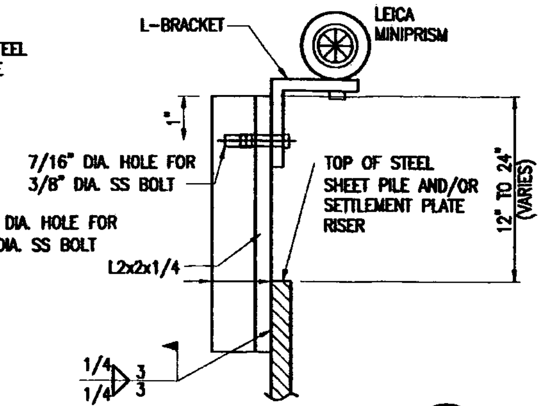
DETAIL 1 C024 C025
SCALE: 1"=1'-0"



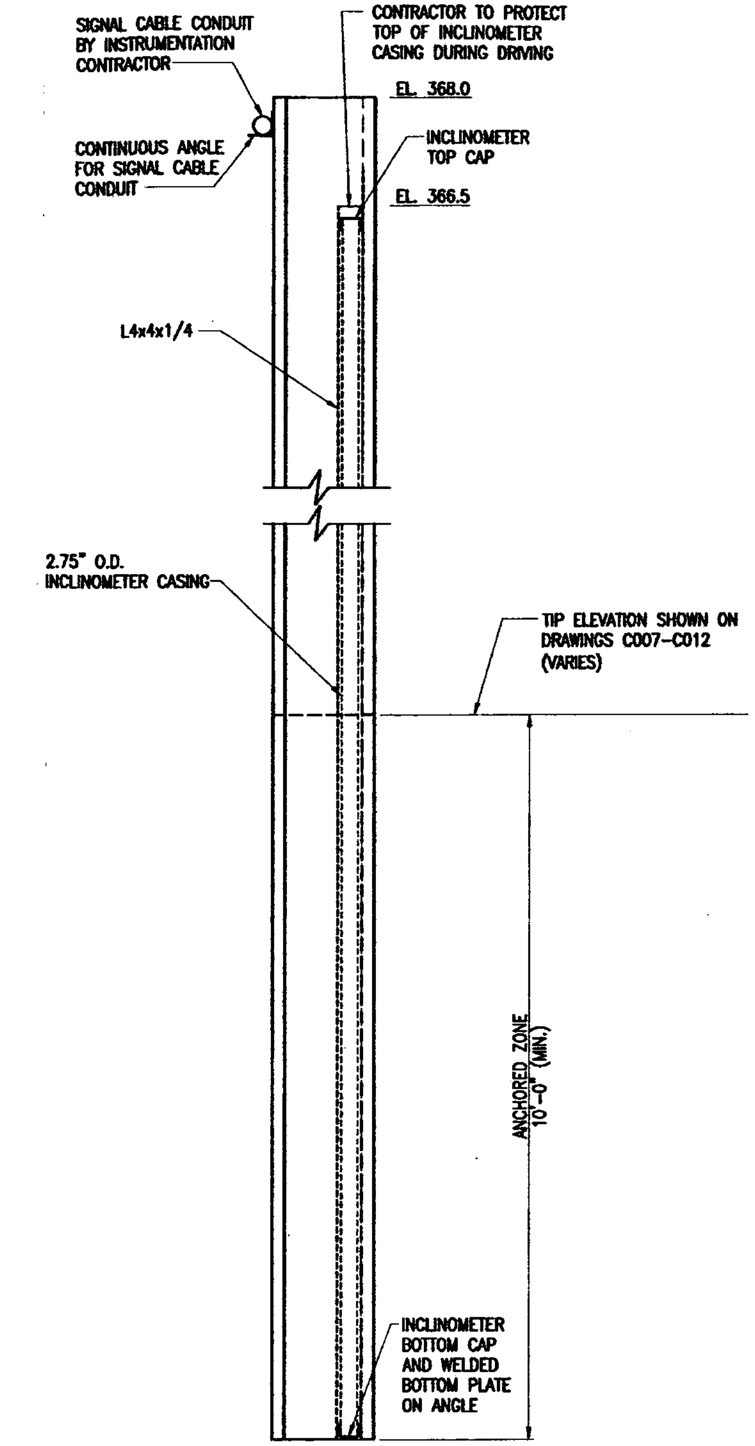
DETAIL 2 C025 C025
N.T.S.



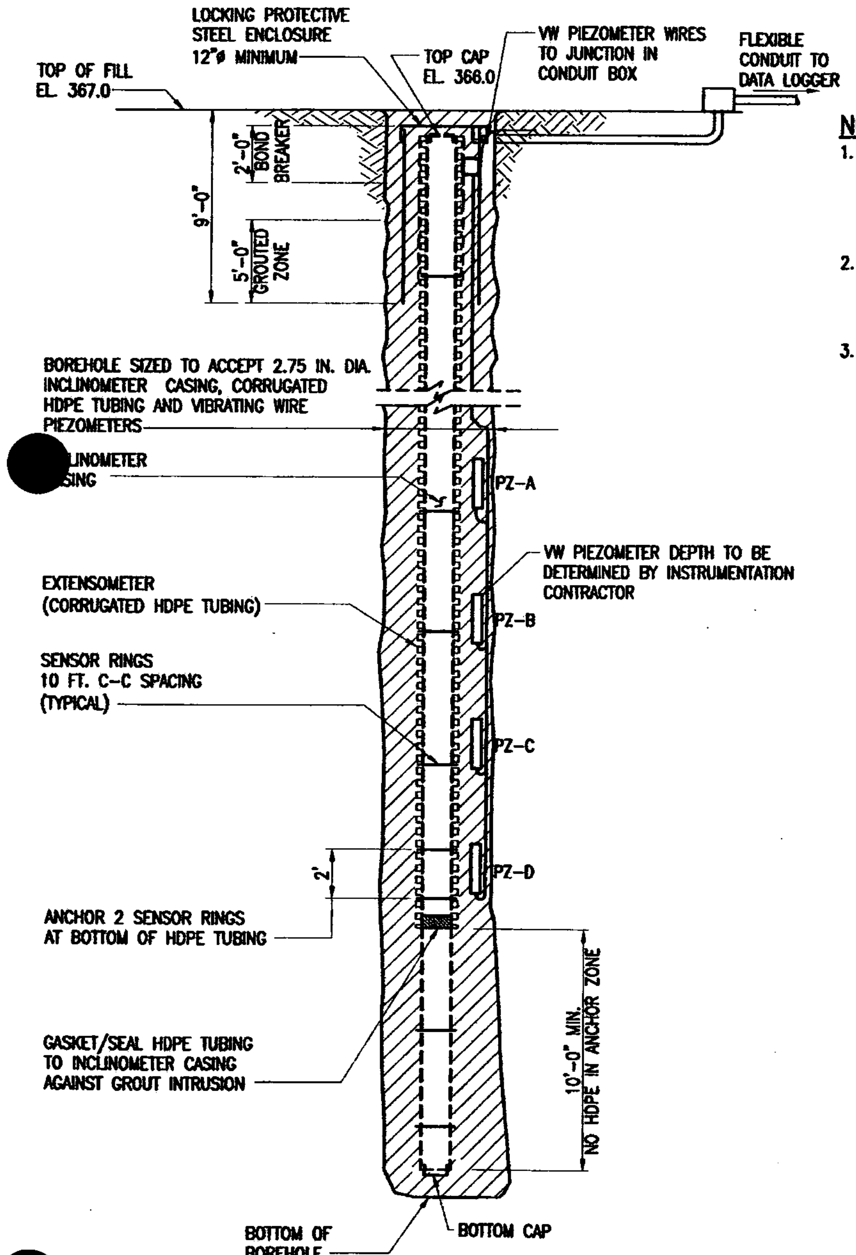
ALTERNATIVE
N.T.S.



SECTION A C025 C025
N.T.S.



SECTION B C025 C025
SCALE: 3/4"=1'-0"

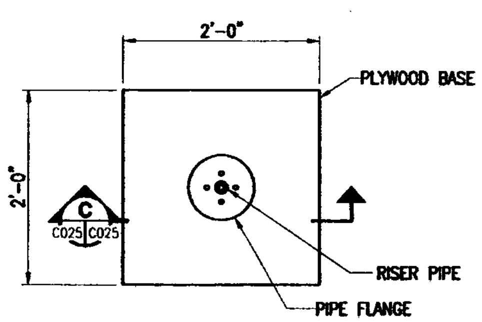


LINOMETER, EXTENSOMETER, PIEZOMETER CLUSTER DETAIL
N.T.S.

NOTES:

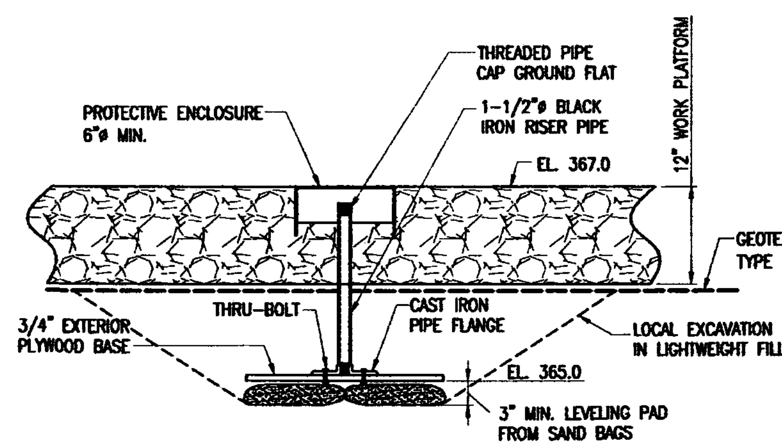
1. INCLINOMETER AND EXTENSOMETER CASING WILL BE 2.75 INCH O.D. ABS CASING WITH FOUR MACHINED LONGITUDINAL GROOVES AND 3-INCH I.D. CORRUGATED HDPE PIPE, RESPECTIVELY. EXTENSOMETER SENSOR RINGS WILL BE STAINLESS STEEL AS RECOMMENDED BY THE MANUFACTURED.
2. PIZOMETERS WILL BE VIBRATING WIRE WITH SUFFICIENT CABLE LENGTH TO EXTEND TO ELEV. 375 IF NECESSARY, ALLOWING FOR SOME FREE LENGTH OF CABLE FOR CONNECTION TO DATA LOGGER AT THE GROUND SURFACE.
3. TREMIE GROUT WILL BE PLACED IN THE ANNULAR SPACE BETWEEN THE BOREHOLE WALL AND THE HDPE PIPE, BUT NOT BETWEEN THE HDPE PIPE AND THE INCLINOMETER CASING. GROUT WILL BE PROPORTIONED AS NOTED.

GROUT PROPORTIONS
1 BAG PORTLAND CEMENT (94#)
40 TO 50 GALLONS WATER
2/3 BAG BENTONITE (30 TO 35#)
MIX CEMENT AND WATER FIRST, THEN ADD BENTONITE



SETTLEMENT MONITORING PLATE

DETAIL 3 C024 C025
N.T.S.



SECTION C C025 C025
N.T.S.

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

DRAWING IS HALF-SIZE IF PLOTTED 11x17

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9801

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: AS SHOWN

WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK

INSTRUMENTATION SECTIONS AND DETAILS

Honeywell

E.C.	03-05-08	J.L.K.	03-05-08
DRAWN	DATE	CHK.	DATE

LOCATION
C025
REV

Section L

Other

(Not Included)

Section M

Design Report

HYDRAULIC BARRIER WALL
Cantilever Sheet Pile with Lightweight Fill

WILLIS AVENUE / SEMET TAR BEDS IRM
LAKE ONONDAGA
SYRACUSE, NEW YORK

PARSONS
290 Elwood Davis Road, Suite 312
Liverpool, New York 13088

MUESER RUTLEDGE CONSULTING ENGINEERS
225 West 34th Street, 14 Penn Plaza
New York, NY 10122

February 15, 2008

WILLIS AVENUE/SEMET TAR BEDS IRM
HYDRAULIC BARRIER WALL
Cantilever Sheet Pile with Lightweight Fill

TABLE OF CONTENTS

Privileged and Confidential; Prepared at Request of Counsel

1.0 INTRODUCTION

This report summarizes the design of the Hydraulic Barrier Wall proposed for the west shoreline of Onondaga Lake in Syracuse, New York. The Hydraulic Barrier Wall will join with the east end of the Semet shoreline barrier and will extend to the Waste Bed B site. The minimum barrier alignment for groundwater containment was determined by Parsons based on the findings of borings. The alignment, illustrated on Drawing C002, is located outboard of the existing causeway and present shoreline (Contract Drawings are attached as Appendix A). Steel sheet pile will be used to construct a new bulkhead in the Lake. Lightweight fill will be placed inboard of the sheets to make land. The bulkhead was designed to allow dredging in front of the sheets. Sheet pile interlocks will be sealed so that the bulkhead will perform as a hydraulic barrier. Steel sheet pile will be driven to close with Stratum M2 so that the hydraulic barrier will impound groundwater above Stratum M2.

2.0 EXHIBITS

The following documents are used to illustrate this report:

Appendix A	-	Contract Drawings 2/01/08
Appendix B	-	FE Design Parameters and Soil Properties
Appendix C	-	Design Section Plan and Profiles
Appendix D	-	Other Analysis:

- Moment Equilibrium Sheet Pile Analysis (DS-2 Cantilever and DS-3 Anchored Wall)
- Settlement Estimates for Lightweight Fill
- Global Stability Calculations (Slope/W)

3.0 BULKHEAD

The bulkhead will be constructed by driving AZ 19-700 sheet pile pairs outboard of the minimum barrier alignment. Two sheets will be threaded and seal welded in the shop to create a single pair for driving. The sheet pairs will be protected with two coats of coal tar epoxy, shop applied, on the outboard side of the sheets. The coating will be applied from final cutoff Elev. +365 to a minimum depth of 6 ft below the existing mudline. Cathodic nodes will be attached to the sheets to reduce corrosion and extend sheet pile life. DeNeef "Swellseal" polyurethane waterstop sealant will be applied to seal field assembled interlocks to enhance hydraulic closure of the sheet pile interlocks.

The bulkhead alignment will fully enclose the minimum barrier alignment determined by borings for containment of impacted soils. Survey will be used to control the sheet pile alignment. The AZ 19-700 sheet section has a lay length of 55 inches per pair, and uses the Larssen interlock. This interlock can accommodate a 5 degree alignment rotation. Special bent sheets will be used to execute changes in the alignment which cannot be accommodated by the sheet pile interlocks.

A woven geotextile will be placed over the mudline to separate the fill from the soft lake bottom sediments.

Lightweight expanded shale aggregate will be placed as fill inboard of the sheet pile bulkhead. The aggregate size will be ¾" - No. 4 sizes. Expanded shale is a manufactured product with a bulk saturated unit weight ranging from 50 lb/cf without compaction to 60 lb/cf with compaction. Compaction of the underwater fill will be accomplished by vibrating probes. Lightweight aggregate will develop an angle of internal friction on the order of 40 degrees.

The lightweight fill will allow construction of land while minimizing ground pressure acting on the sheet pile bulkhead. Under lightweight fill the soft lake deposits will deform elastically and spread outward into the lake, resulting in a few inches of sheet pile translation. The soft lake deposits do not require vertical drains or detailed fill staging for stabilization under lightweight fill. Long term settlement of made land inboard of the bulkhead is estimated to be on the order of 18 to 30 inches. Settlement analyses are presented in Appendix D.

Fill will be placed to construct a work platform at Elev. +367 to provide truck access for materials delivery and for future construction of the head maintenance system, shoreline erosion control, cap, and landscape features. The fill will be placed against the causeway structure at Elev. +367.5 and will develop an angle of repose into the void below the structure. Management of the causeway structure will be under a separate design following construction of the bulkhead.

The bulkhead design assumes the work platform condition will remain when dredging occurs. While the design analysis predicts that the cantilever sheet pile bulkhead will perform with only small deformation during dredging, it is assumed that the dredged condition is temporary and the lake bottom will be restored after dredging. Additionally, to minimize movement of the sheeting, the design assumes that live loads will not be allowed inboard of the bulkhead during dredging. The design analysis indicates the cantilever bulkhead with lightweight fill will allow dredging to up three meters in Design Sections 1, 2, and 4. (Design sections are indicated in the profile drawings C007 through C012.

A tieback and deadman system must be installed to support the bulkhead along Design Section 3, the deep water portion of the alignment, if more than two meters of dredging is required, or if the area behind Design Section 3 is to be used as a marine bulkhead for dredging support . Tie rods would be connected to the bulkhead sheet pile with an internal wale at Elev. +364. Tie rods would extend approximately 80 ft inboard to engage a sheet pile dead man at Elev. +364.

4.0 BARRIER

The hydraulic barrier is created by driving the bulkhead sheet piles to close with Stratum M2 and sealing the sheet pile interlocks. Stratum M2 is a thick regional deposit of soft to medium clay and silty clay. The profiles of Drawings C007 through C012 illustrate the top of

Stratum M2 from boring records and the planned minimum sheet pile tip elevations along the barrier alignment. The final sheet tip elevations were extended below the minimum embedment for structural fixity to close with the top of Stratum M2.

The alignment will be constructed with approximately 234 welded sheet pile pairs, so that approximately 234 interlocks are assembled and sealed in the field with DeNeef "Swellseal" polyurethane waterstop. The sheet pile interlocks will be relatively impermeable because they are driven into low permeability soil deposits. The hydraulic barrier performance will be enhanced by placing DeNeef in each field assembled interlock.

The exposed face of the sheet piles will be coated with coal tar epoxy. The coating will extend from final cutoff at Elev. +365 to 7 ft below the existing mudline. The coal tar epoxy is an impermeable sealant applied to the steel which prevents water contact and thus reduces corrosion by limiting cyclic exposure of the steel to moisture and oxygen changes in the splash zone. To lengthen the life of the bulkhead, sacrificial cathodic nodes will be attached to the sheets to reduce corrosion of the exposed sheeting. The cathodic anodes will dissolve with time and will require observation, maintenance and periodic replacement.

Cathodic anodes use a natural potential difference that exists between the structure and a second metal in the same environment to provide a driving voltage. As the sacrificial anode dissolves, it provides a source of electrons so that the chemical reaction does not require the iron electrons. The corrosion mechanism requires oxygen to and the oxygen deficiency in saturated soils at depth will prevent corrosion below the mudline and in the filled basin inboard of the bulkhead.

5.0 CANTILEVER SHEET PILE BULKHEAD DESIGN

5.1 Soil Strength, Consolidation, and Stiffness

The barrier alignment is underlain with soft fill and soft cohesive lake deposits. Compressive strength defined by laboratory testing of undisturbed samples is summarized in Table 1 of Appendix B. The analysis assumes undrained conditions for all strata. Because the lightweight fill does not increase ground stresses dramatically, design analyses use the initial strength of each deposit.

According to the Northeast Solite Corporation, Solite has been tested for degradation after 300 freezing and thawing cycles (AASHTO T103) and showed a 1% loss. Testing with the Los Angeles Abrasion Test (AASHTO T-96 B) showed less than 30% loss. Additionally, we performed a Standard Proctor Compaction test (ASTM D-698) in our laboratory and qualitatively noted that the degradation of the material was not significant. Any alternative light-weight fill purchased for this project should be required to have similar properties.

5.2 Mudline Stability Under Lightweight Fill Placement

Lightweight fill was assumed to weigh 20 lb/cf below the water table and 60 lb/cf compacted above the water table. Because of its light weight, the lake mud sediments will remain stable when lightweight fill is placed, so that placement slopes do not require control. A woven geotextile placed on the mudline will separate the lightweight aggregate from the soft lake deposits. The geotextile is not required for stability, but it will be placed and anchored to enhance local mudline stability. The mudline will be observed for signs of mudwaving, which can be controlled by altering fill placement slopes.

5.3 Design Analysis

The bulkhead alignment was subdivided into four design sections for analysis. The design sections were determined based on the elevation of the mudline and the elevation of the top of Stratum M2 along the alignment. Design sections are indicated in the profiles of Contract Drawings C007 through C012 in Appendix A. The design analysis load cases are presented on Drawing CO19.

Conventional analysis for cantilever sheet piles is a simple moment equilibrium of the sheet pile (driving soil pressure compared to resisting soil pressures) about the sheet pile toe. Standard practice requires lengthening sheet pile embedment about 40% of the computed depth of moment equilibrium below analysis mudline. The moment equilibrium analysis for Design Sections 2 and 3, included in Appendix D, computed that the minimum depth required for structural stability is several feet above the top of Stratum M2. The sheet lengths were extended below that depth to obtain the required hydraulic closure in Stratum M2. The FEM estimated performance indicates that the design sheeting embedment obtains fixity, and bending is mobilized in the sheeting.

A global stability analysis was performed using the software application Slope/W 2004, published by Geo-Slope. The analysis used was the Bishop method. Design Sections 2 and 3 were analyzed for three separate conditions. Each section was analyzed for the placement of fill prior to construction of the sheet pile with LW Fill placed on a 1:1 slope over the mudline, and included a 24-foot wide crane load of 600 psf set 3 feet back from the top of the slope. Factors of Safety for this construction condition were between 1.3 and 1.5. These design sections were also analyzed for the 3 meter dredge condition with the flat work platform of Elev. +367 and live loads of 200 psf. These cases yielded factors of safety between 1.7 and 2.0. Design Section 3 was additionally analyzed for stability under marine facility loads prior to dredging (Drawing C019), yielding a factor of safety of 1.6. For temporary conditions, a factor of safety of 1.3 is typically acceptable. These stability analyses are presented in Appendix D.

5.4 FEM Analysis Results

To supplement the conventional cantilever sheet pile analysis, the Hydraulic Barrier Wall performance was assessed using Plaxis FEM (Finite Element Method) software. A Plaxis model was developed for Design Sections 1, 2, and 3, using available soil test data to develop stress-strain parameters, and standard soil model assumptions where site tests were not available.

The FEM allows a performance based analysis that takes into account a greater number of variables than the conventional cantilever sheet pile analysis. Through this method sheet pile displacements (including translation and bending) were estimated. This FEM analysis considered stresses that occur due to the staged filling, dredging, and include the complex geometry of each design section. Estimated movements of the sheeting are presented in the table below:

		Estimated Deformations (in)				
		Cantilevered Bulkhead			Tied Back	
		DS-1	DS-2	DS-3	DS-3	DS-3 with Marine Facility Loads
Translation at toe	Work Platform at Elev. +367	2.4	2	2.9	2.9	12.1
	1m Dredge	1.9	1.9	2.2	2.1	9.6
	2m Dredge	2.8	3.1	3.6	3.3	10.5
	3m Dredge	3.9	4.6	5.1	4.4	10.9
	Final Condition	3.3	3.7	3.7	3.2	12.1
Bending - Displacement between top and toe	Work Platform at Elev. +367	0.3	0.6	2.3	2.3	1.6
	1m Dredge	0.2	1	3.3	2.2	2.9
	2m Dredge	0.3	0.6	3.3	1.5	2.4
	3m Dredge	0.7	0.6	3.8	1.3	2.1
	Final Condition	2.8	2.5	7.4	2.9	1.7

Design Sections 1, 2, and 3 were evaluated for deformation resulting from lightweight fill placement, and for dredging to 1, 2, and 3 meters. Design Section 3 was also analyzed for displacements under loading for a marine facility. The final conditions assume that the mudline has been restored and the level of the backfill behind the bulkhead is sloped from Elev. +365 up to Elev. +372. Design Section 3 was analyzed assuming that an anchorage system was installed with a 5 kip/ft load. The design backfill and live load condition are presented in Drawing C019.

5.5 Barrier

DeNeef Interlock sealant will be placed using DeNeef's dry cure method. As defined by DeNeef, Swellseal is applied to the interior of one interlock and allowed to bond, dry, and shrink. For installation the interlock with sealant is driven over the clear interlock. After sheet pile placement the sealant material swells to fill the interlock cavity, and contact the male lock under the swelling pressure. Placed with the dry cure method, the sealant contact with the clear interlock is allowed to slip at the contact interface if differential settlement occurs between sheets, so that the sealant material is not sheared.

5.6 Sheet Tip Elevations

A geologic profile along the barrier alignment and the elevation of the sheet tips are illustrated on Drawings C007 through C012 of Appendix A. The soil profile was taken from the borings indicated; borings are located in plan on Drawing C001. The elevation of the top of Stratum M2 was interpolated between borings to define a continuous profile for sheet length estimates.

The pile tip elevations were selected to provide a minimum closure of 3 ft with Stratum M2, as determined from the profile of Drawings C007 through C012. In a few locations the available borings are too far apart for valid selection of the sheet tip elevations. In these areas the sheet pile tip elevations were extended an additional 3 ft to insure that the steel inventory provided for construction will be sufficient to obtain closure. To possibly reduce the sheeting lengths in these areas, additional borings could be performed to better define the top of Stratum M2 prior to construction.

5.7 Inboard Water Levels

The water level behind the bulkhead will be controlled after the area inboard of the bulkhead is isolated from the Lake. While the remediation requires lowering inboard water levels to obtain an inward gradient, the design assumes an inboard water level Elev. +365 prior to dredging and during the final condition after restoring the mudline. Drainage will be required before the hydraulic bulkhead barrier sheets are cutoff at Elev. +365. During the dredge condition, we have assumed that the water level inboard of the sheeting will be controlled at Elev. +362. Higher water levels inboard will result in greater movement of the sheet pile bulkhead.

6.0 CONSTRUCTION SURVEY

Construction survey implemented by the Contractor will include land survey to locate the minimum barrier alignment control points and the pile driving template for pile placement. Survey of the outboard face of sheet piles will be performed at about 50 ft spacing. Land survey for sheet pile position will be performed during construction and filling stages and periodically after construction to check sheet pile deflection.

7.0 INSTRUMENTATION

Instrumentation will be placed at selected locations along the alignment so that bulkhead performance can be observed during construction. Instrumentation will include observation of the movement profile (inclinometer), increase of ground pressure resulting from fill placement in Strata F2, M1, and M2 (measurement of pore water pressure using vibrating wire piezometers), compression profile at inclinometers (extensometers) and tilt of the sheet (tilt meters). Settlement plates will be placed along select sections to monitor settlement under the lightweight fill and construction live loads. Instrumentation locations are illustrated on Drawing C023, and instrumentation details are defined on Drawings C024 to C025. Instrumentation should be installed as early as possible in the fill sequence. Tilt meter and vibrating wire piezometers will be read manually on installation, and connected to automatic data loggers after the risk of construction damage is reduced.

Inclinometers measure movements with respect to the ground surface and will be used to establish bending displacements of the bulkhead below the ground surface and determine whether movements are accelerating or decelerating. Piezometers will be used in fine grained strata to determine whether excess pore water pressures have dissipated (and strengths have increased) or have not dissipated (and strengths remain reduced). Extensometers measure lengthening and shortening, and will be used in the boreholes to measure the compression occurring in the inclinometers. Tiltmeters will measure the tilt from vertical of the bulkhead and provide information on the movement of the bulkhead. Settlement plates will be used to collect data on the settlement that has occurred within the basin. The total displacements of the bulkhead wall will be measured by surveyed locations along the wall. All of this data together will be used to determine whether movements are accelerating or decelerating, whether additional analyses are required, and will be used to monitor the stability of the bulkhead prior to and during dredging.

Translation will be monitored through a combination of the surveyed bulkhead points and the inclinometer profiles. Though we have estimated translation with the FEM, translation is not typically analyzed. Depending on construction sequences, some translation may occur prior to installing the sheeting. While there is no set maximum translation, the rate of translation should not increase with time. Rotation of the sheeting is of a greater concern, as this would be the likely mode of failure because of the soft soils outboard. Rotation at the top of the sheeting on the order of 1% of the length of the sheeting should be tolerable so long as the rate of movement is not increasing. If the rate is increasing with time, the backfill should be removed to unload the sheet pile cantilever.

Instrumentation will provide information of bulkhead deformation performance through the construction phase, permitting a post-construction review and calibration of the FEM analysis prior to dredging, if needed. Monitoring will also provide information of how seasonal fluctuations (temperature changes, water level, and ice loading) influence sheeting performance to understand the sensitivity of the structure prior to dredging. Deformation estimates for the dredging case using a calibrated FEM can be used to better estimate cantilever performance in Design Sections 1, 2, and 4, and to confirm the need for tieback support in Design Section 3.

Very truly yours,

MUESER RUTLEDGE CONSULTING ENGINEERS

By:
Jesse L. Richins

STATE OF NEW YORK
PETER WEBSTER DEMING
No. 062765-1
LICENSED PROFESSIONAL ENGINEER

By:
Peter W. Deming, P.E.

JLR:PWD:F:\98\9801\Hydraulic Barrier - Shoreline\Hydraulic Barrier Report-3.Doc

APPENDIX A

WILLIS AVE./SEMET TAR BEDS IRM
HYDRAULIC BARRIER WALL

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

NOTICE

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

JOB NO.

CONTRACTOR'S JOB NO.

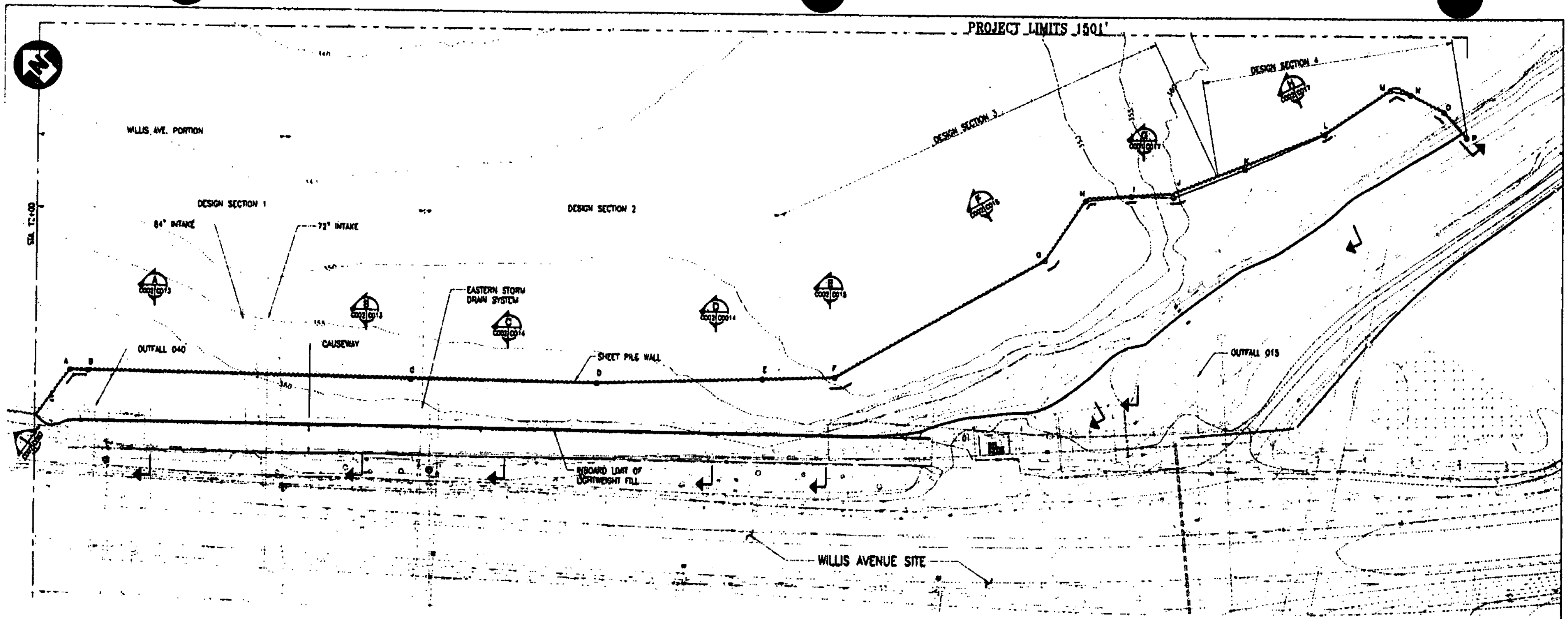
SCALE NTS

COVER SHEET

Honeywell

DRAWN | DATE | CHK. | DATE

C001



PLAN

SCALE: 1"=50'

COORDINATE POINTS		
LABEL	NORTH	EAST
A	1118639.84	922413.47
B	1118625.71	922426.18
C	1118378.07	922654.64
D	1118233.24	922790.02
E	1118111.10	922914.82
F	1118057.30	922969.30
G	1117985.30	923211.0
H	1117999.20	923286.50
I	1117988.50	923322.80
J	1117938.04	923352.75
K	1117902.85	923425.95
L	1117868.23	923510.67
M	1117850.92	923591.26
N	1117832.55	923602.78
O	1117784.13	923814.32
P	1117757.82	923811.67

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

PARSONS

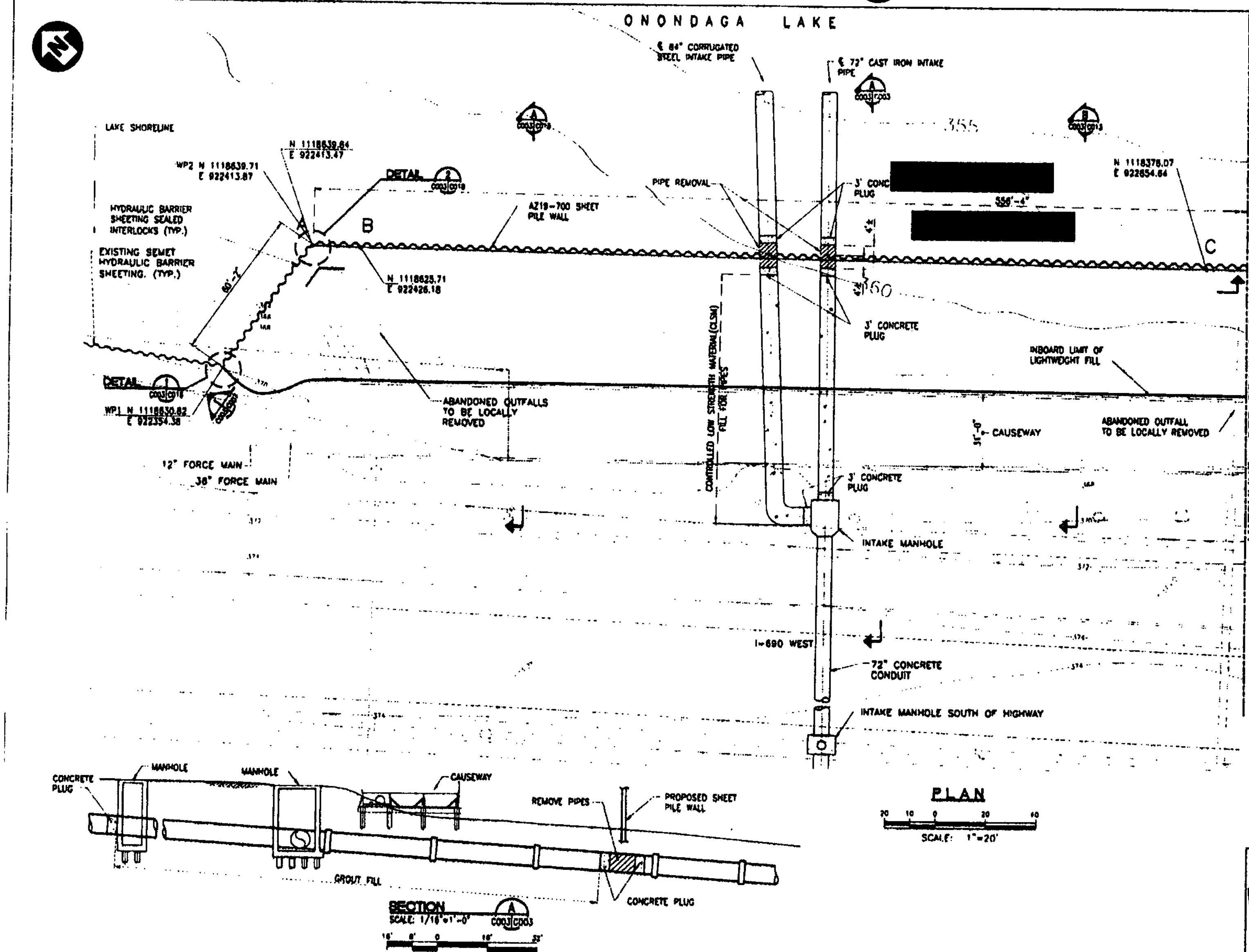
MUESER RUTLEDGE CONSULTING ENGINEERS

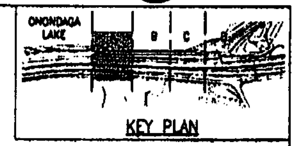
SHEET PILE WALL
GENERAL PLAN

SCALE: 1"=50'-0"

Honeywell

C002





REQUIREMENTS FOR SEALING INTAKE PIPES

1. CAST 4000 PSI UNREINFORCED CONCRETE PLUGS WITHIN THE 84 INCH AND 72 INCH INTAKES AT THE LOCATIONS SHOWN.
2. FILL PIPES WITH CLSM, REMOVE WATER FROM PIPES AS CLSM IS PLACED.
3. INSTALL FLOATING SILT CURTAIN AND LOCALLY REMOVE MUD TO ACCESS PIPES AT SHEETING ALIGNMENT.
4. LOCALLY REMOVE PIPES AND RESTORE MUDLINE.

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

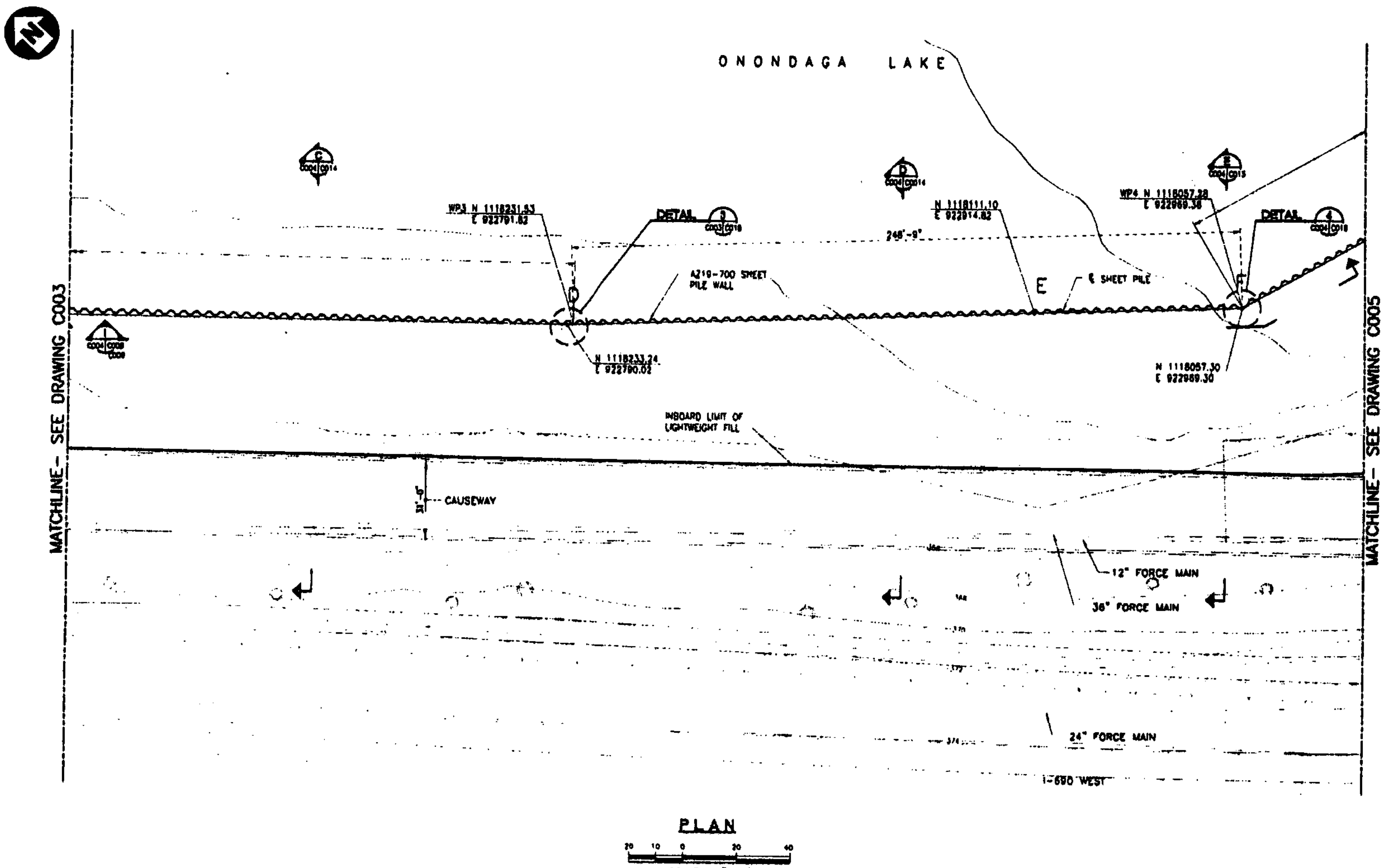
MUESER RUTLEDGE CONSULTING ENGINEERS

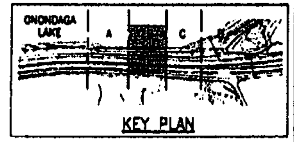
SCALE: AS SHOWN

SHEET PILE WALL
DETAIL PLAN 1

Honeywell

C003





NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

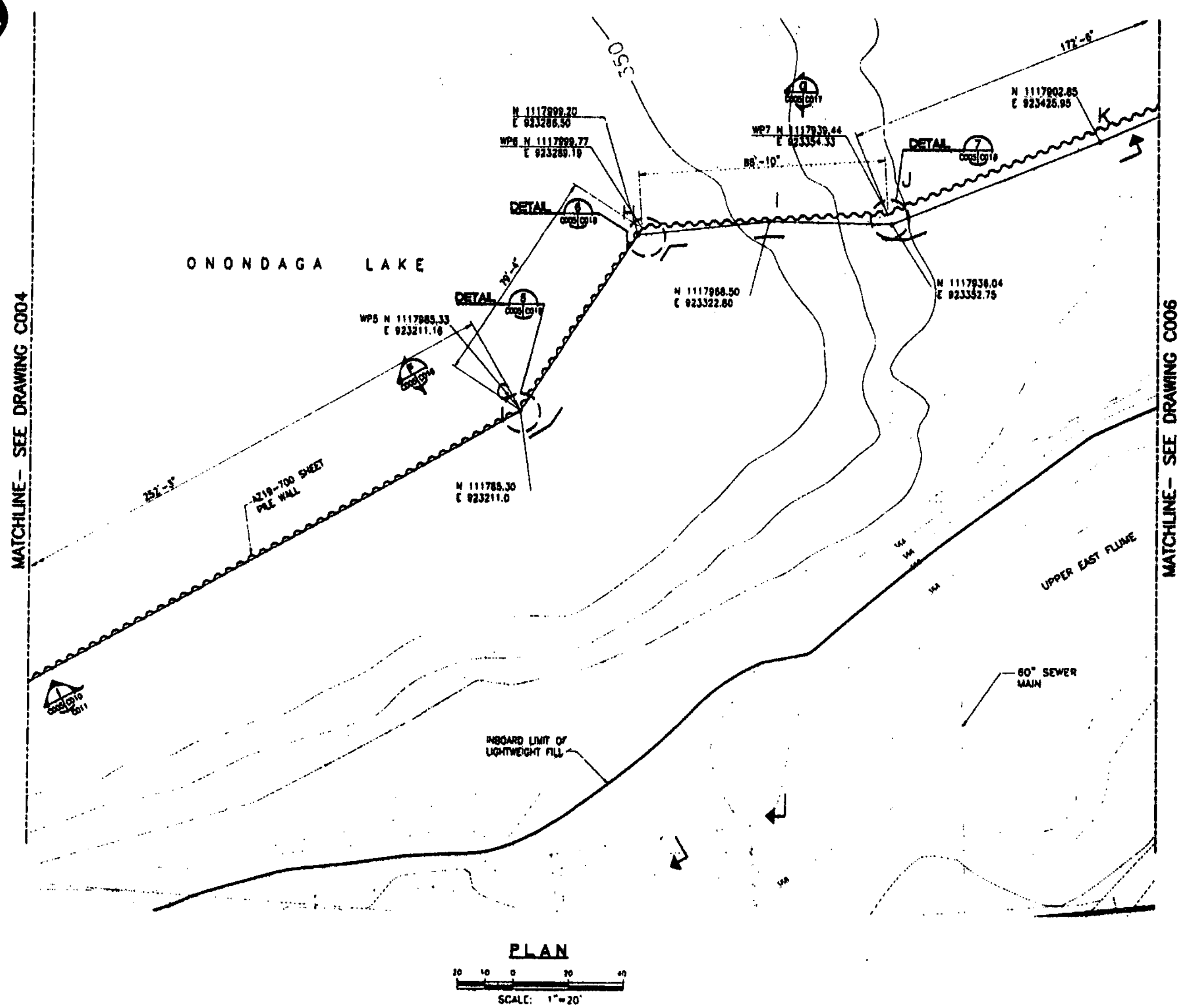
PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

SHEET PILE WALL
DETAIL PLAN 2

Honeywell

C004 | 0



KEY PLAN

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

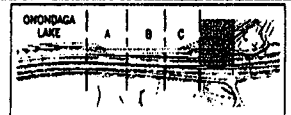
NOTICE

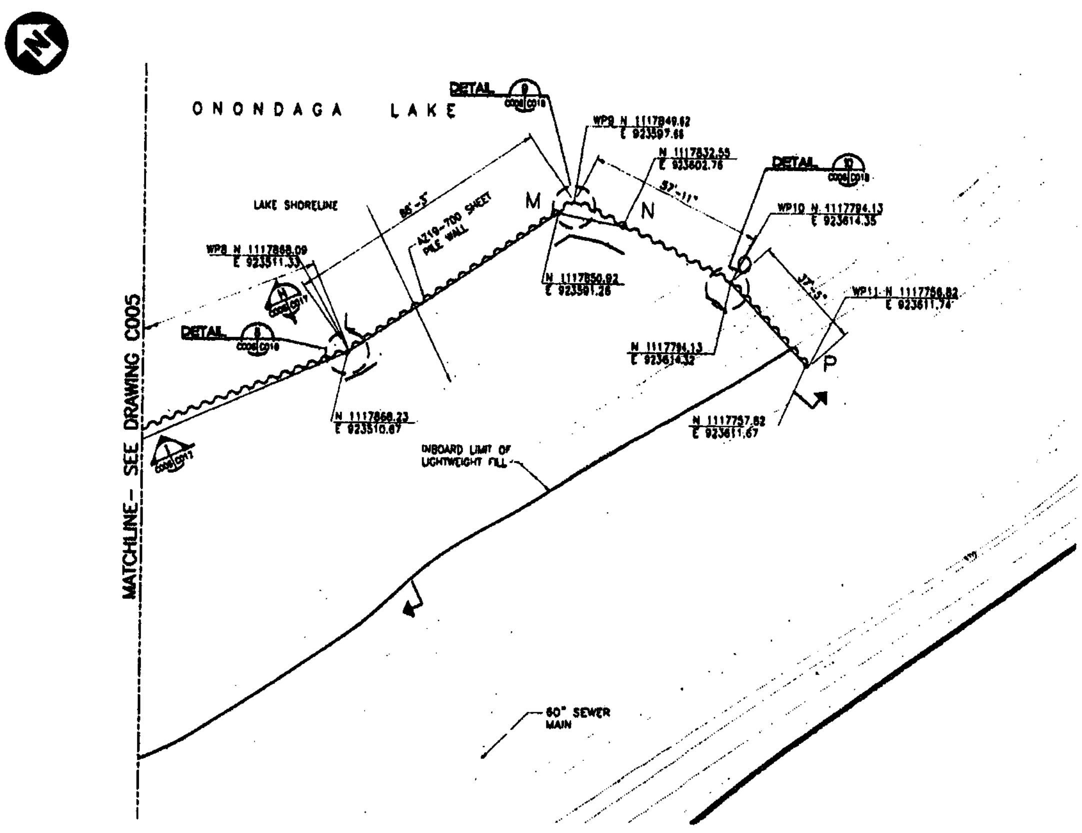
NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												

Honeywell

SHEET PILE WALL
DETAIL PLAN 3

C005 0





PLAN

SCALE: 1"=20'

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

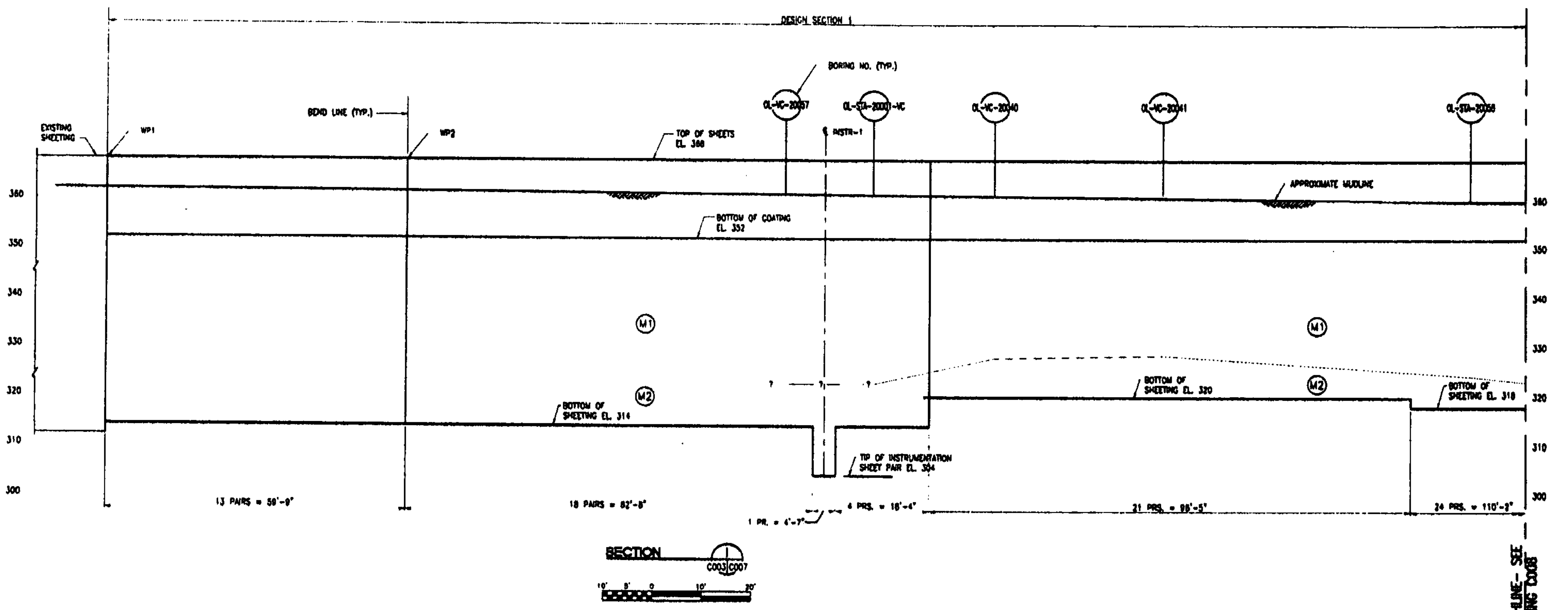
MUESER RUTLEDGE CONSULTING ENGINEERS

SHEET PILE WALL
DETAIL PLAN 4

Honeywell

C006

0



SECTION C003 C007

GENERAL NOTES:

1. STRATIFICATIONS SHOWN ARE NECESSARY INTERPOLATIONS BETWEEN BORINGS AND MAY NOT REPRESENT ACTUAL SUBSURFACE CONDITIONS.
2. TOP OF COATING AT ELEVATION +368.

GENERAL STRATA DESCRIPTIONS:

- F2 SOLVAY WASTE: SOFT WHITE SILT, SOME TO TRACE FINE SAND
- M1 MARL: SOFT GRAY CLAYEY SILT, SOME TO TRACE FINE TO COARSE SAND, GRAVEL, SHELLS.
- M2 SILT & CLAY: SOFT TO MEDIUM STIFF BROWN CLAYEY SILT TO SILTY CLAY, TRACE FINE SAND AND SILT SEAMS.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

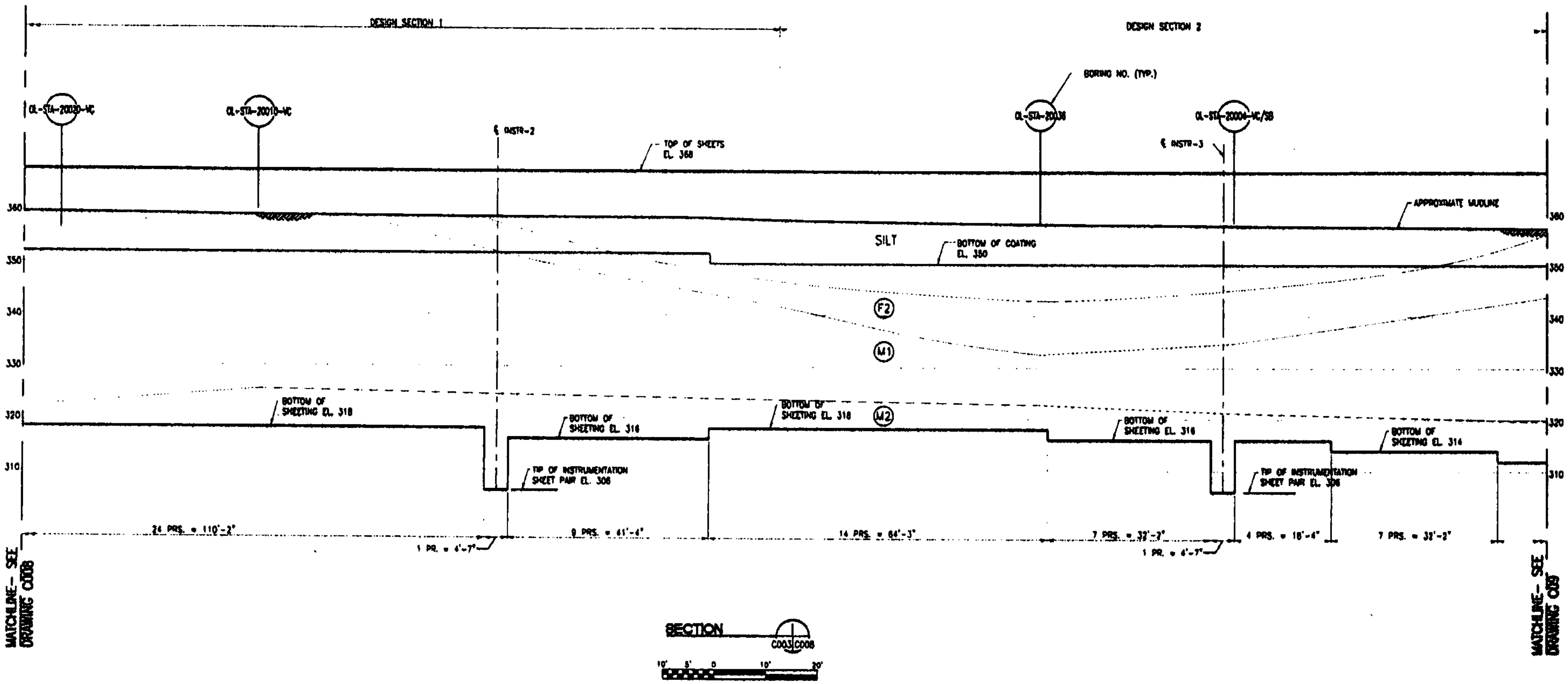
NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

SCALE: GRAPHIC

SHEET PILE WALL
LONGITUDINAL SECTION 1

Honeywell

C007



DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

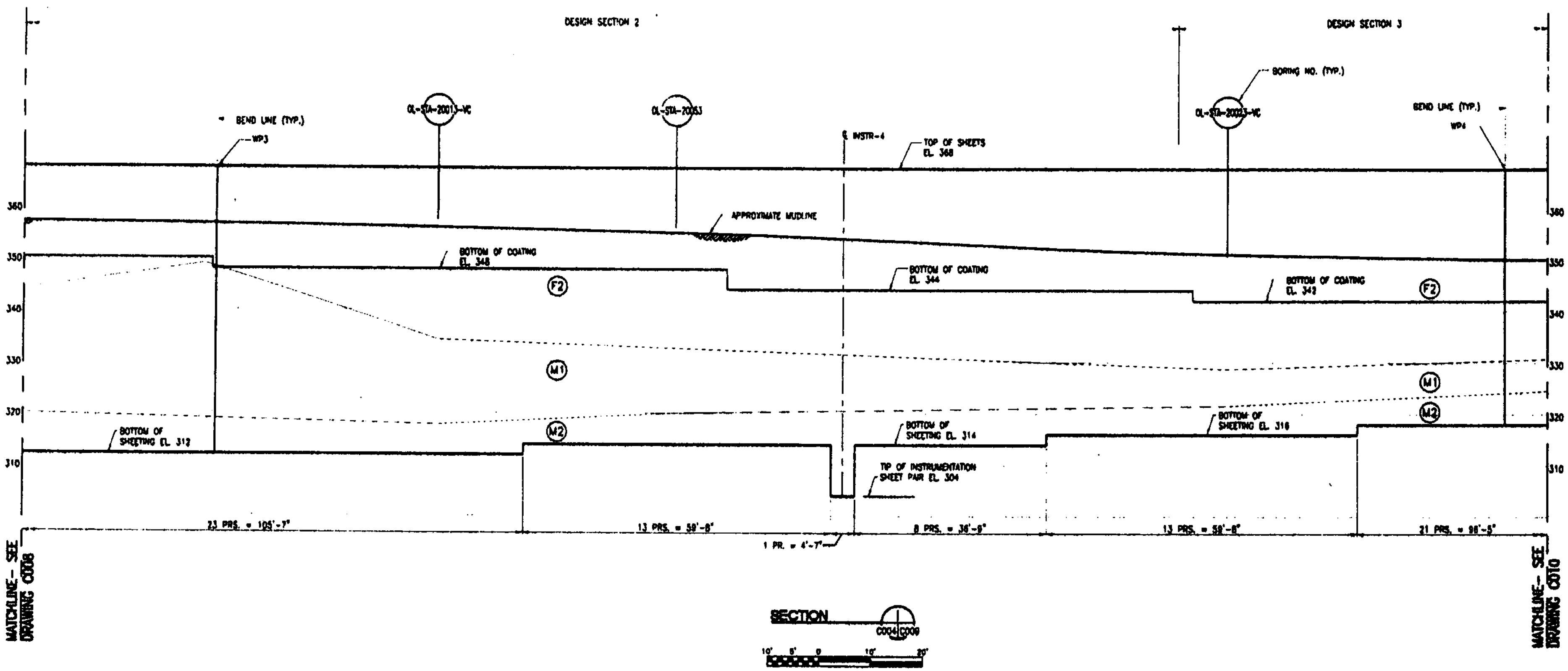
NOTICE

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

SHEET PILE WALL
LONGITUDINAL SECTION 2

Honeywell

C008



DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

NOTICE

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												

JOB NO.
CONTRACTOR'S JOB NO.
SCALE GRAPHIC

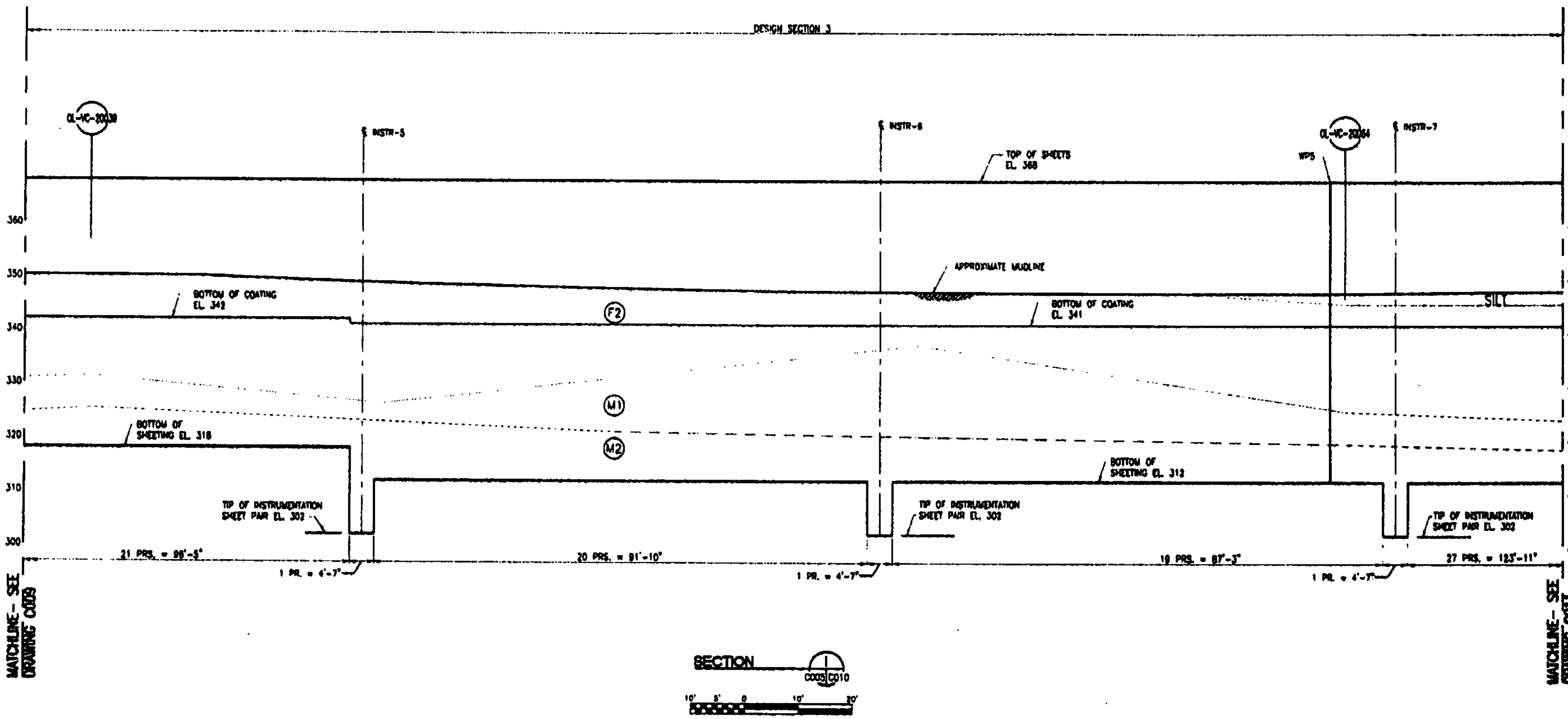
SYRACUSE, NEW YORK

SHEET PILE WALL
LONGITUDINAL SECTION 3

Honeywell

DRAWN | DATE | CHK. | DATE

C009



DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

NOTICE

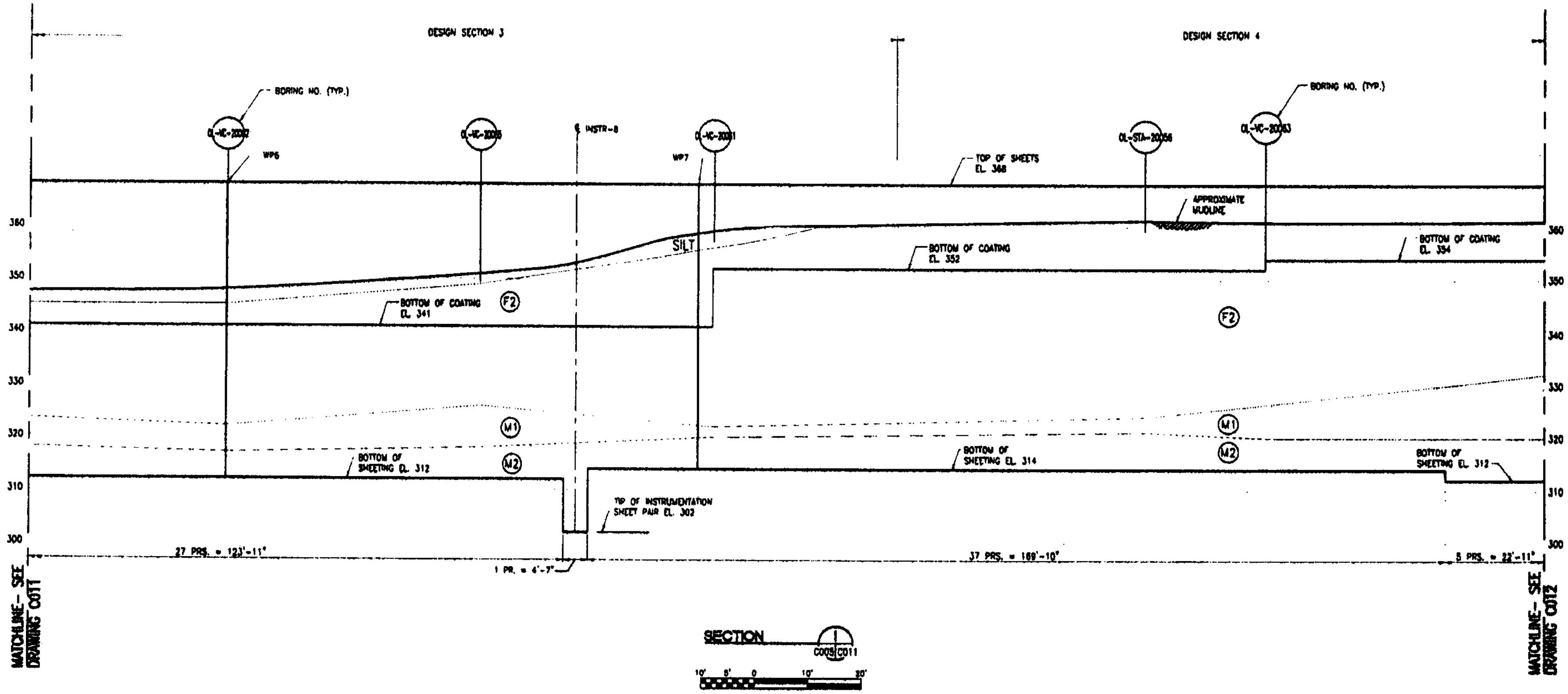
JOB NO.
CONTRACTOR'S JOB NO.
SCALE: GRAPHIC

SHEET PILE WALL
LONGITUDINAL SECTION 4

Honeywell

DRAWN | DATE | CHK. | DATE

C010



DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

NOTICE

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

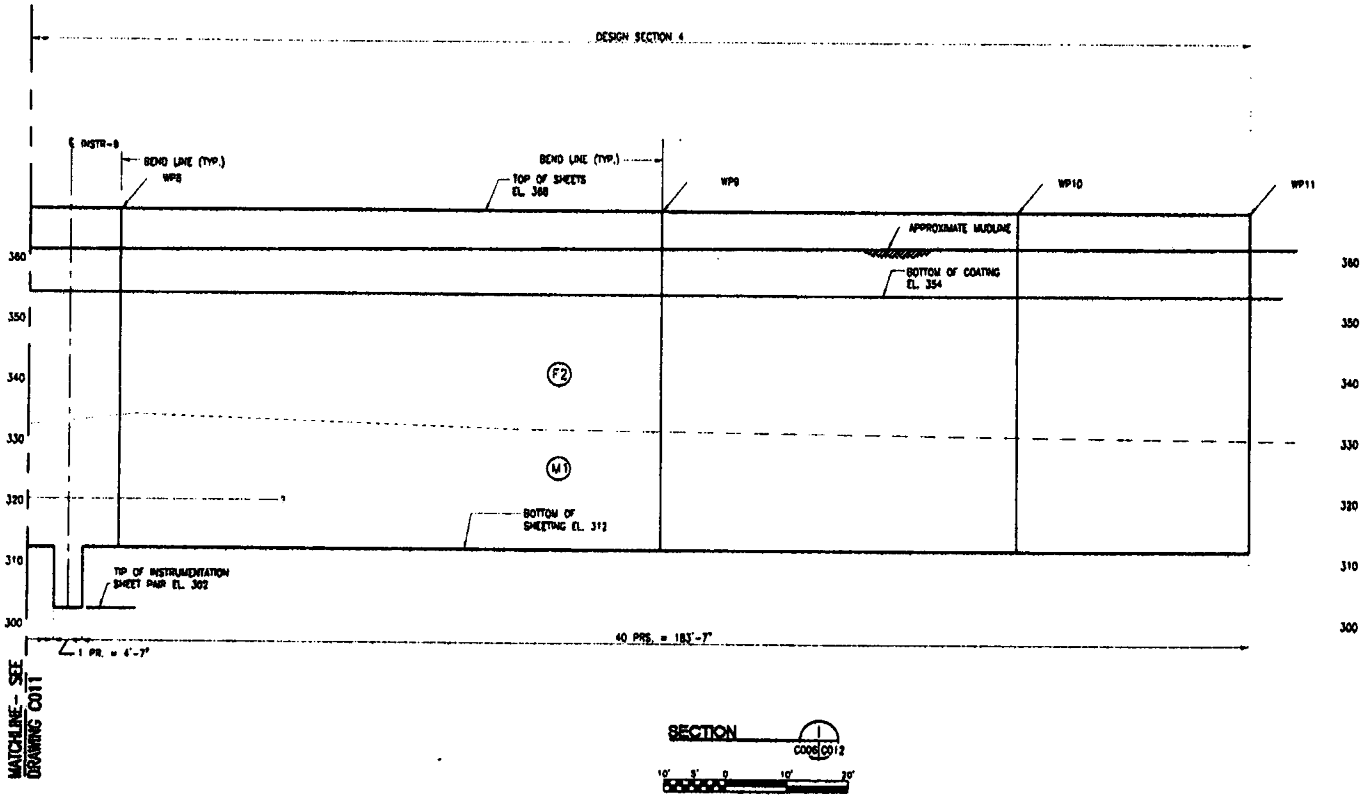
JOB NO.
CONTRACTOR'S JOB NO.
SCALE: GRAPHIC

SHEET PILE WALL
LONGITUDINAL SECTION 5

Honeywell

DRAWN | DATE | CHK. | DATE

C011



DRAWING IS
HALF-SIZE IF
PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

SHEET PILE WALL
LONGITUDINAL SECTION 6

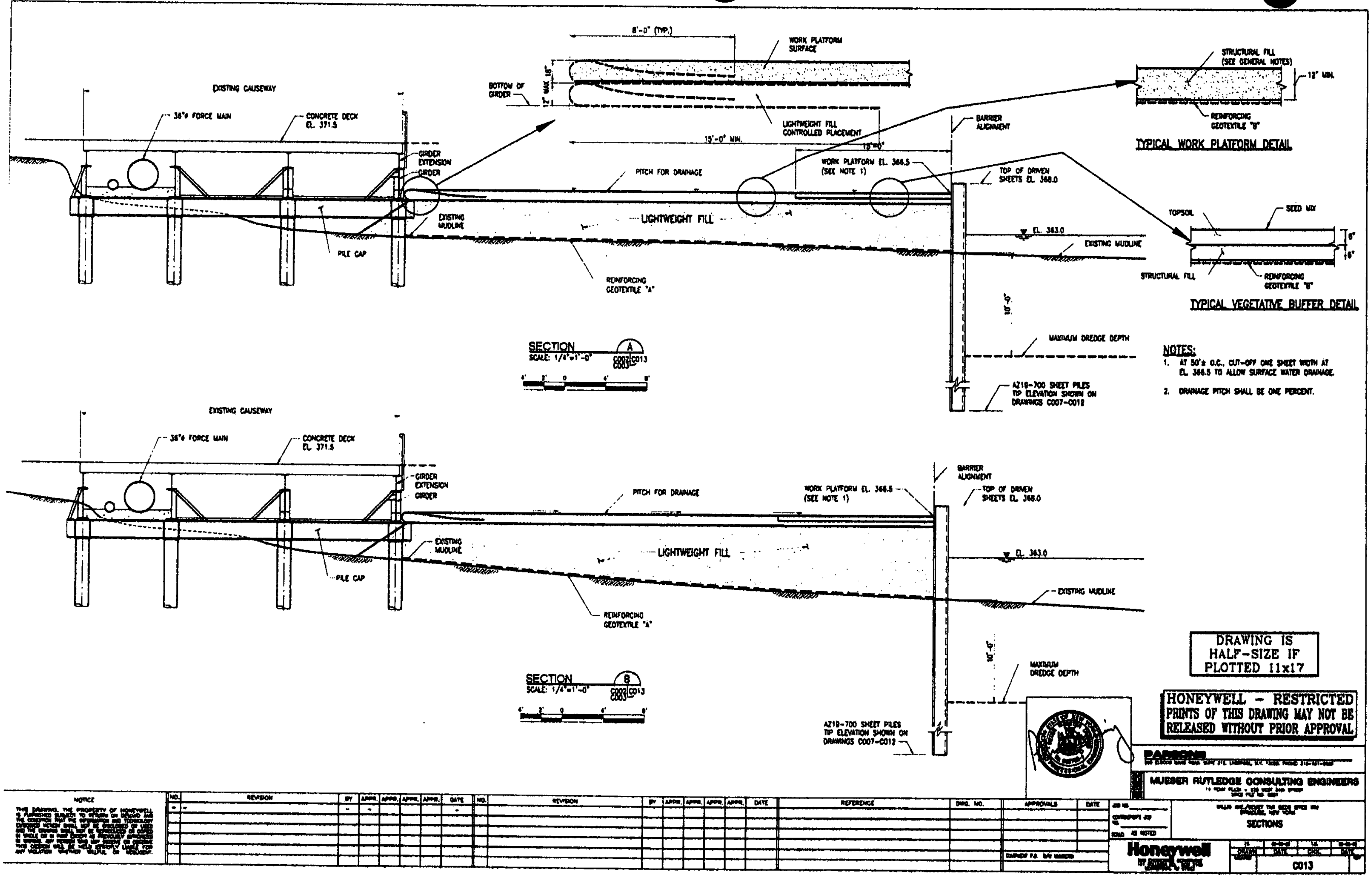
SCALE GRAPHIC

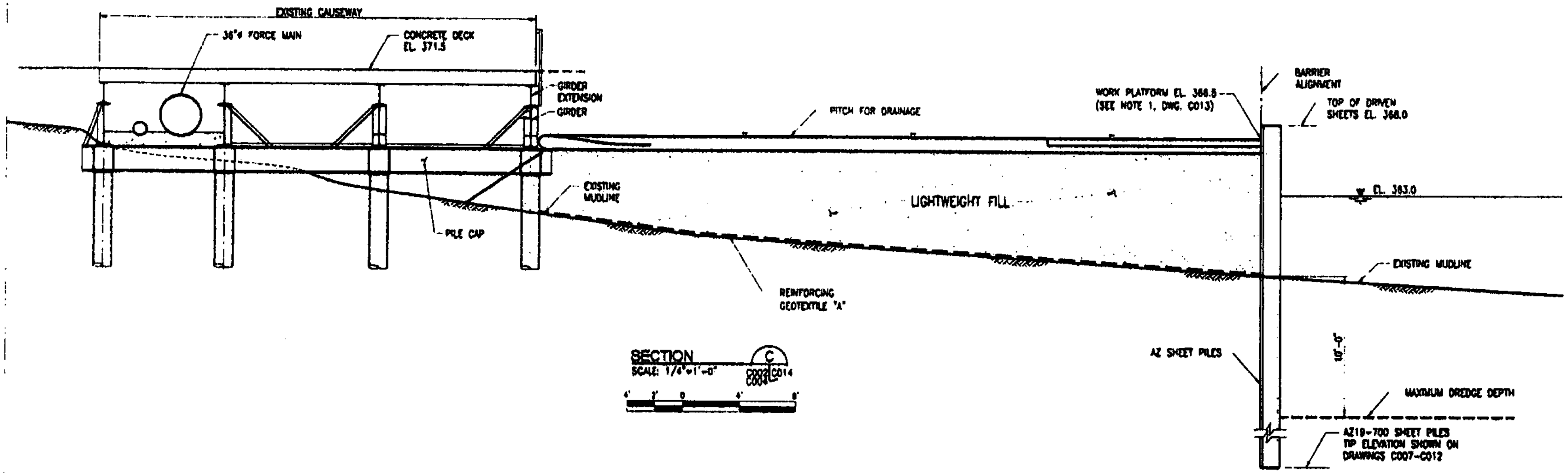
Honeywell

C012

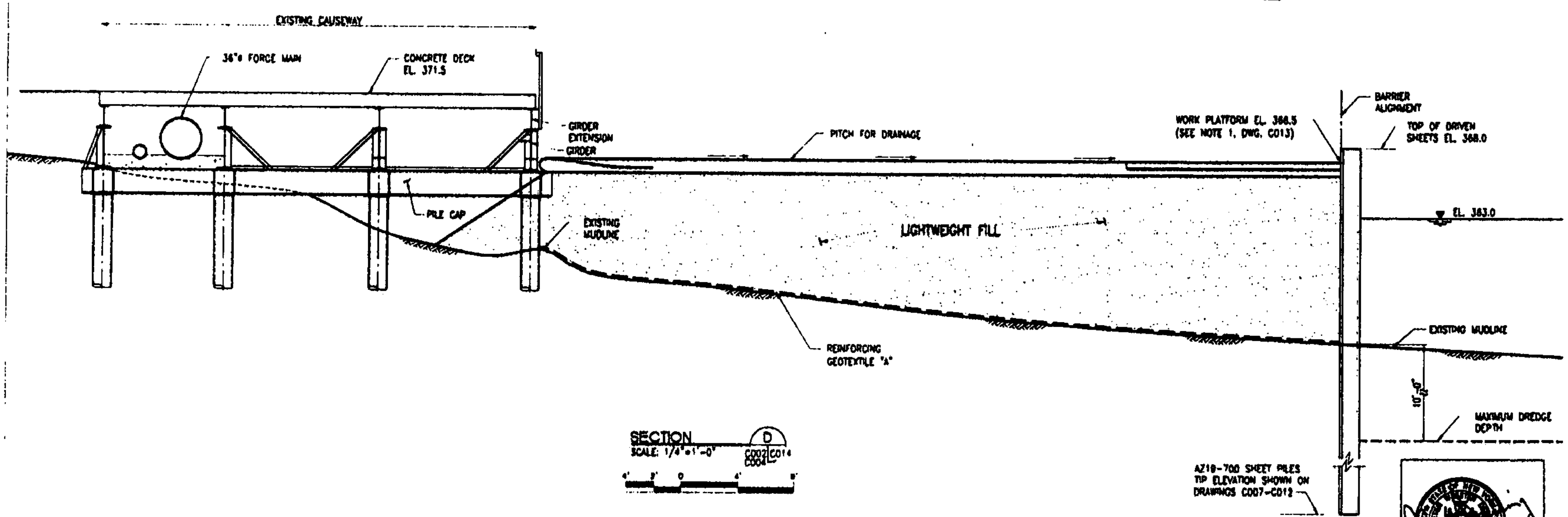
NOTICE

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												


EXISTING CAUSEWAY
36"ø FORCE MAIN
CONCRETE DECK EL. 371.5
GIRDER EXTENSION
GIRDER
PILE CAP
EXISTING MUDLINE
PITCH FOR DRAINAGE
LIGHTWEIGHT FILL
REINFORCING GEOTEXTILE "A"
8'-0" (TYP.)
WORK PLATFORM SURFACE
BOTTOM OF GIRDER
12" MAX.
LIGHTWEIGHT FILL CONTROLLED PLACEMENT
15'-0" MIN.
15'-0"
BARRIER ALIGNMENT
WORK PLATFORM EL. 368.5 (SEE NOTE 1)
TOP OF DRIVEN SHEETS EL. 368.0
EL. 363.0
EXISTING MUDLINE
10'-0"
MAXIMUM DREDGE DEPTH
AZ18-700 SHEET PILES TIP ELEVATION SHOWN ON DRAWINGS C007-C012
SECTION A
SCALE: 1/4"=1'-0"
C002 C003 C013
STRUCTURAL FILL (SEE GENERAL NOTES)
12" MIN.
REINFORCING GEOTEXTILE "B"
TYPICAL WORK PLATFORM DETAIL
TOPSOIL
SEED MIX
6"
6"
STRUCTURAL FILL
REINFORCING GEOTEXTILE "B"
TYPICAL VEGETATIVE BUFFER DETAIL
NOTES:
1. AT 50'± O.C., CUT-OFF ONE SHEET WIDTH AT EL. 368.5 TO ALLOW SURFACE WATER DRAINAGE.
2. DRAINAGE PITCH SHALL BE ONE PERCENT.
EXISTING CAUSEWAY
36"ø FORCE MAIN
CONCRETE DECK EL. 371.5
GIRDER EXTENSION
GIRDER
PILE CAP
EXISTING MUDLINE
PITCH FOR DRAINAGE
LIGHTWEIGHT FILL
REINFORCING GEOTEXTILE "A"
BARRIER ALIGNMENT
WORK PLATFORM EL. 368.5 (SEE NOTE 1)
TOP OF DRIVEN SHEETS EL. 368.0
EL. 363.0
EXISTING MUDLINE
10'-0"
MAXIMUM DREDGE DEPTH
AZ18-700 SHEET PILES TIP ELEVATION SHOWN ON DRAWINGS C007-C012
SECTION B
SCALE: 1/4"=1'-0"
C002 C003 C013
DRAWING IS HALF-SIZE IF PLOTTED 11x17
HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL
PARSONS
MUESER RUTLEDGE CONSULTING ENGINEERS
NOTICE
REVISION
REFERENCE
APPROVALS
DATE
SCALE AS NOTED
SECTIONS
Honeywell
DRAWN
DATE
CHK.
DATE
C013



SECTION C
SCALE: 1/4"=1'-0"
C002 C004 C014



SECTION D
SCALE: 1/4"=1'-0"
C002 C004 C014

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

NOTICE

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												

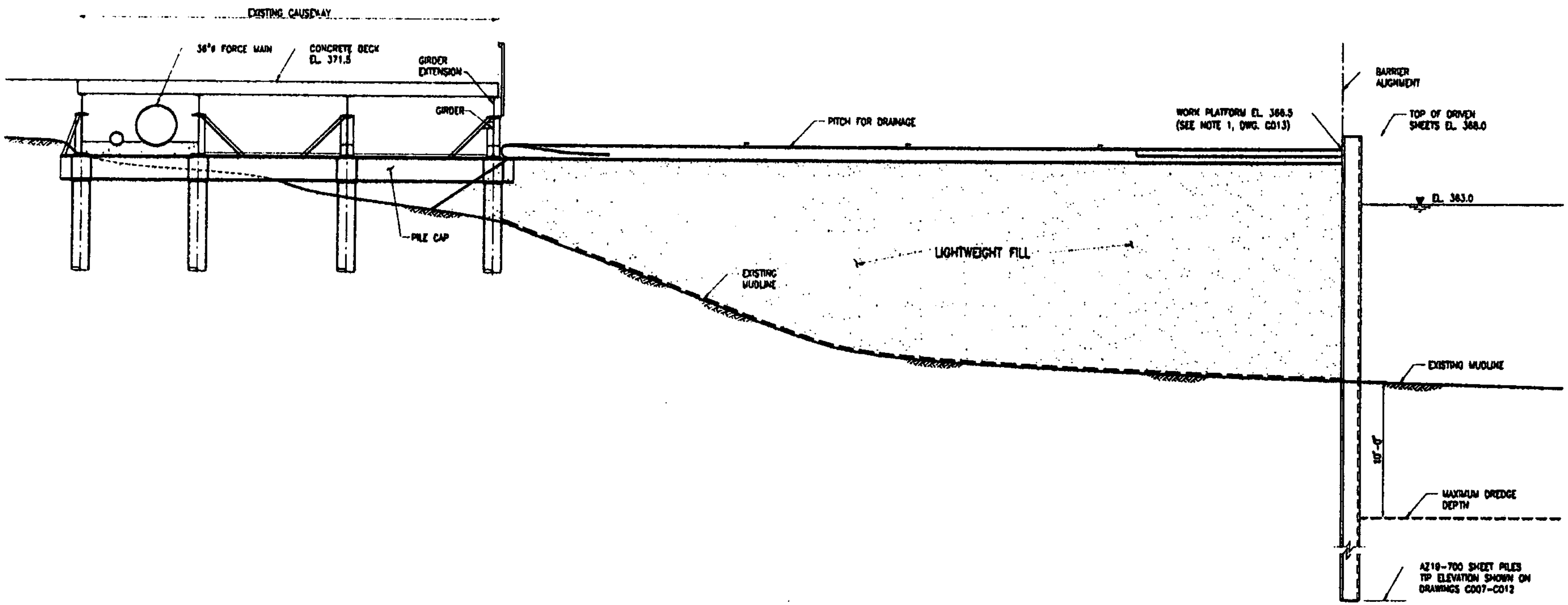
SCALE: AS NOTED

SECTIONS

Honeywell

DRAWN | DATE | CHK. | DATE

C014



SECTION E
SCALE: 1/4"=1'-0"
C002 C004 | C015

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

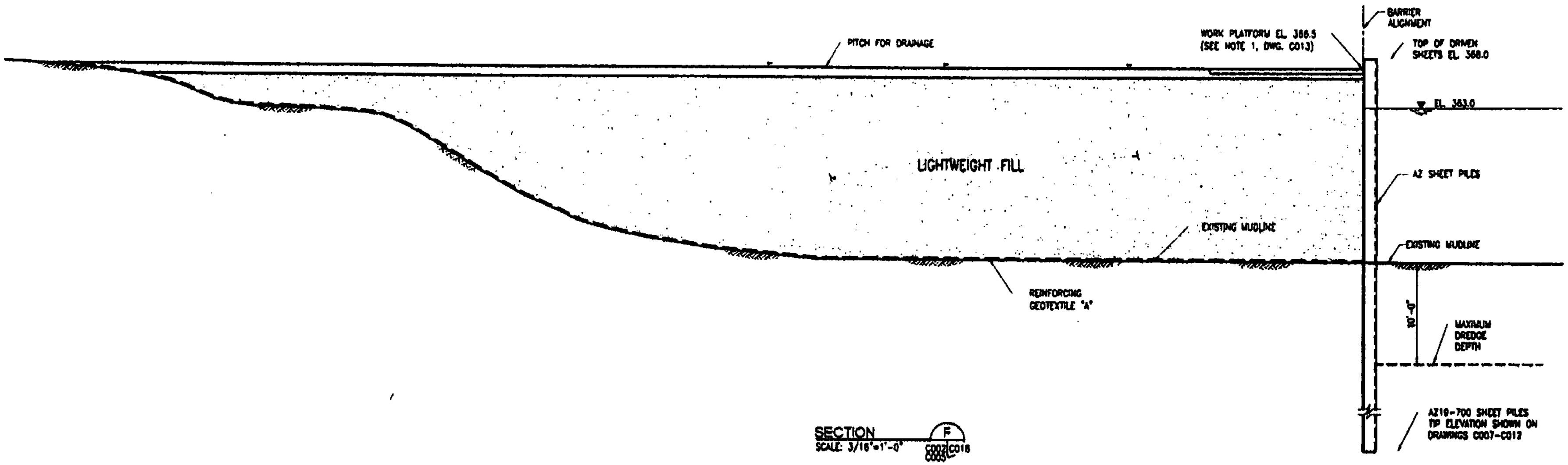
MUESER RUTLEDGE CONSULTING ENGINEERS

SECTIONS

SCALE: AS NOTED

Honeywell

C015



SECTION F
SCALE: 3/16"=1'-0"
C007/C016
C005

4' 0 4' 8' 12'

DRAWING IS HALF-SIZE IF PLOTTED 11x17

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

SECTIONS

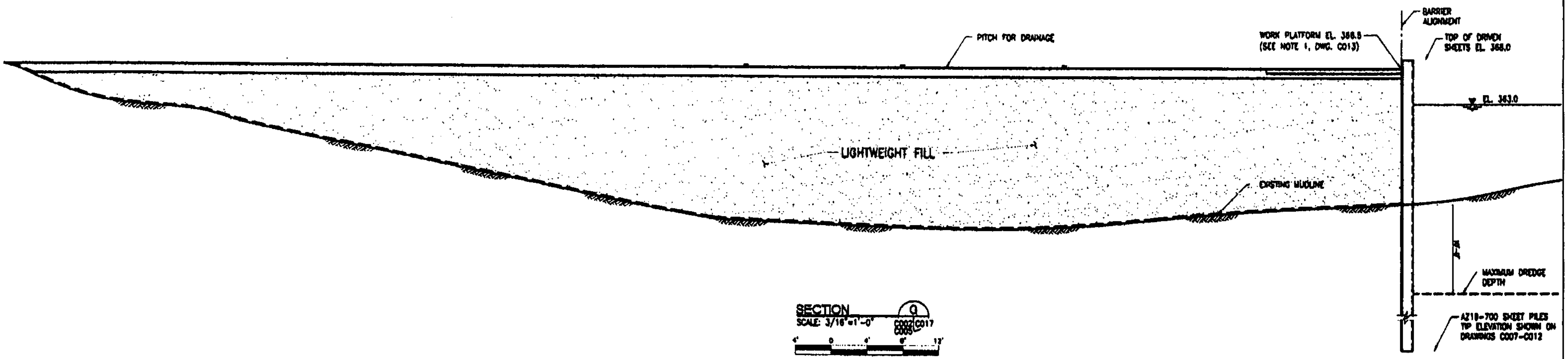
SCALE: AS NOTED

Honeywell

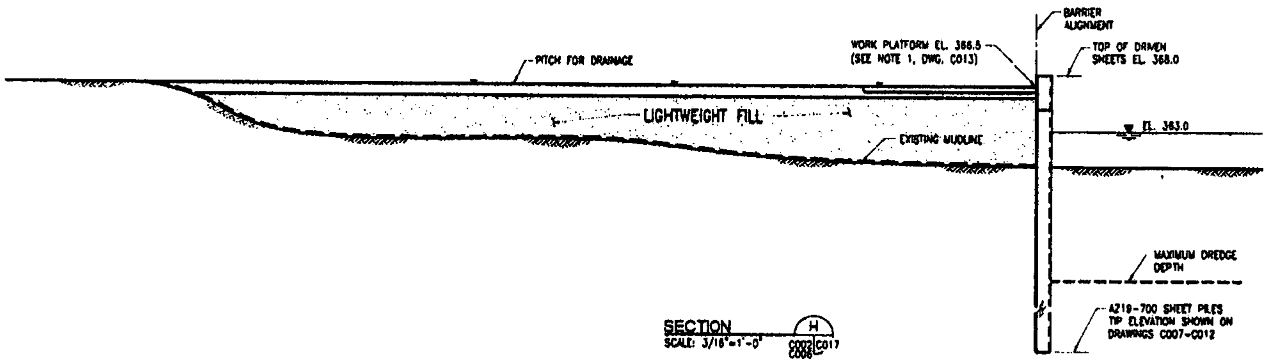
DRAWN | DATE | CHK. | DATE

C016

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE



SECTION G
SCALE: 3/16"=1'-0"
C002 C005 C017



SECTION H
SCALE: 3/16"=1'-0"
C002 C006 C017

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

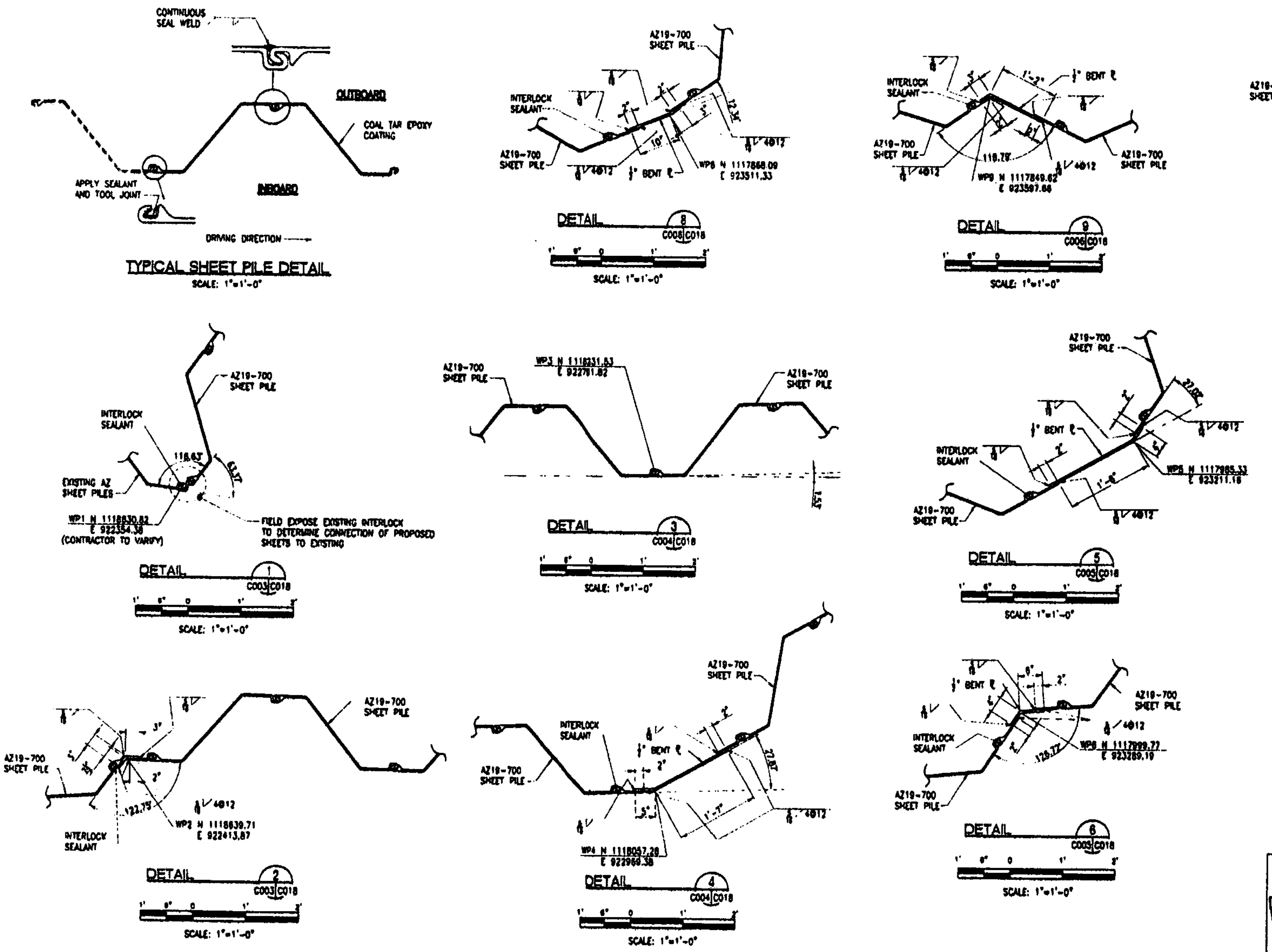
NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												

SCALE: AS NOTED

SECTIONS

Honeywell

C017



NOTE:

1. COORDINATES AND ANGLES SHOWN ARE EXACT THEORETICALS.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

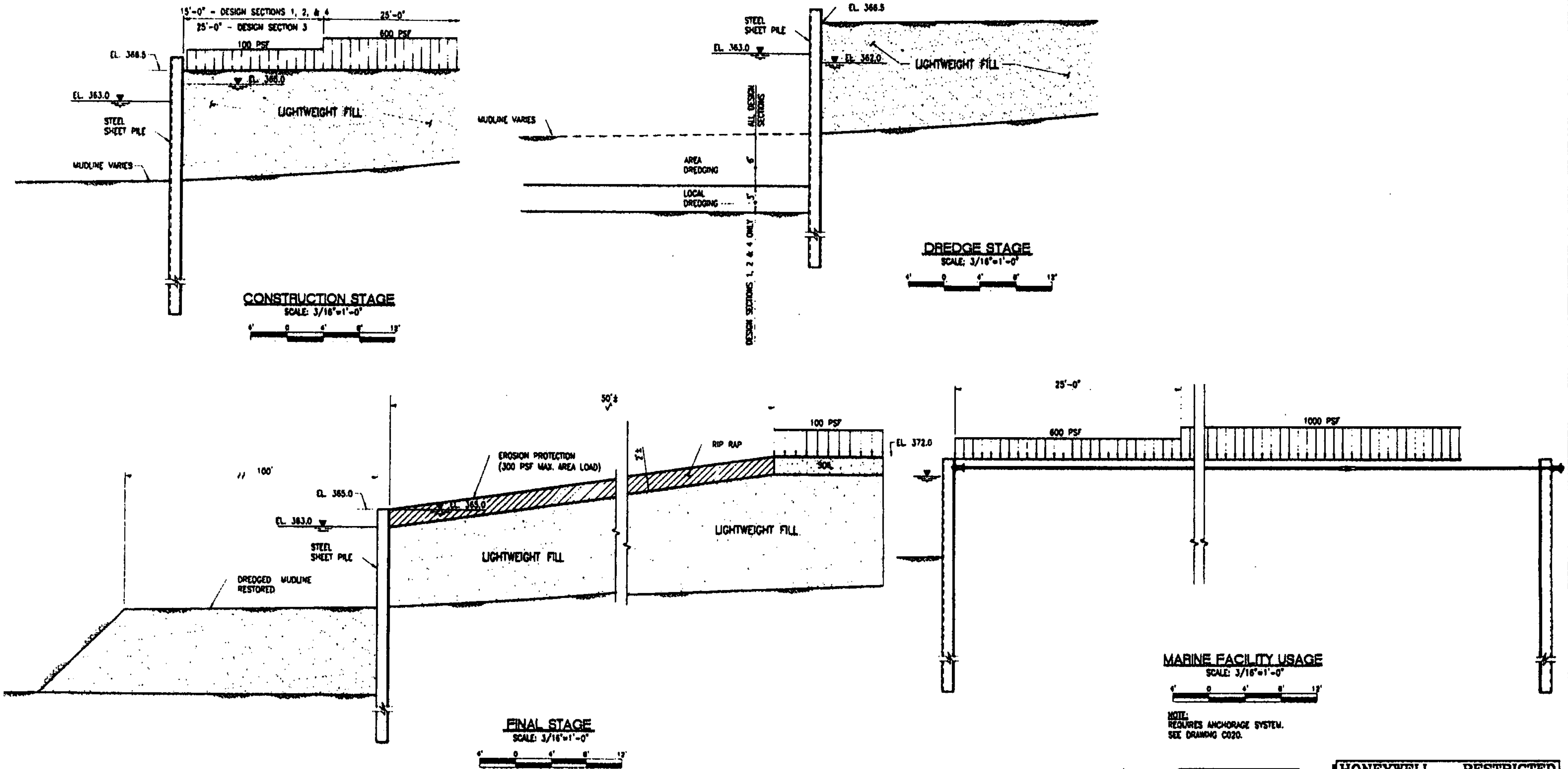
NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

DETAILS

SCALE: AS NOTED

Honeywell

C018



HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE
RELEASED WITHOUT PRIOR APPROVAL

DRAWING IS
HALF-SIZE IF
PLOTTED 11x17

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

NOTICE

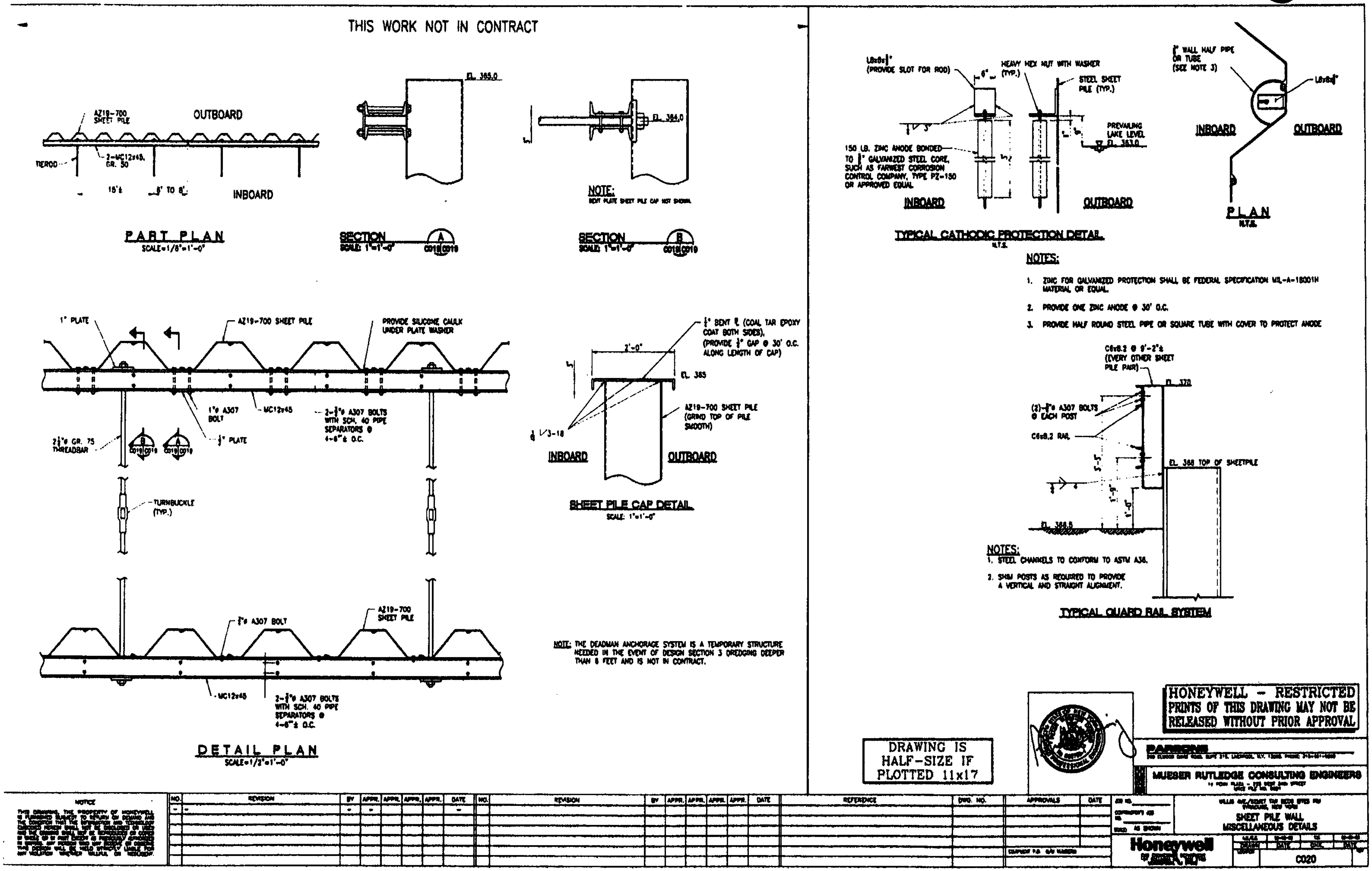
NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

SCALE: AS NOTED

DESIGN CRITERIA

Honeywell

C019


THIS WORK NOT IN CONTRACT
AZ19-700 SHEET PILE
OUTBOARD
TIEROD
2-MC12x45, GR. 50
INBOARD
PART PLAN
SCALE=1/8"=1'-0"
SECTION A
SCALE: 1"=1'-0"
EL. 385.0
SECTION B
SCALE: 1"=1'-0"
EL. 384.0
NOTE:
BOLT PLATE SHEET PILE CAP NOT SHOWN.
1" PLATE
AZ19-700 SHEET PILE
PROVIDE SILICONE CAULK UNDER PLATE WASHER
1"ø A307 BOLT
MC12x45
2-⅞"ø A307 BOLTS WITH SCH. 40 PIPE SEPARATORS @ 4-6"± O.C.
2¼"ø GR. 75 THREADBAR
½" PLATE
TURNBUCKLE (TYP.)
⅞"ø A307 BOLT
AZ19-700 SHEET PILE
MC12x45
2-⅞"ø A307 BOLTS WITH SCH. 40 PIPE SEPARATORS @ 4-6"± O.C.
DETAIL PLAN
SCALE=1/2"=1'-0"
½" BENT ℞ (COAL TAR EPOXY COAT BOTH SIDES). (PROVIDE ½" GAP @ 30' O.C. ALONG LENGTH OF CAP)
2'-0"
EL. 385
AZ19-700 SHEET PILE (GRIND TOP OF PILE SMOOTH)
3-18
INBOARD
OUTBOARD
SHEET PILE CAP DETAIL
SCALE: 1"=1'-0"
NOTE: THE DEADMAN ANCHORAGE SYSTEM IS A TEMPORARY STRUCTURE NEEDED IN THE EVENT OF DESIGN SECTION 3 DREDGING DEEPER THAN 8 FEET AND IS NOT IN CONTRACT.
(PROVIDE SLOT FOR ROD)
HEAVY HEX NUT WITH WASHER (TYP.)
STEEL SHEET PILE (TYP.)
PREVAILING LAKE LEVEL
150 LB. ZINC ANODE BONDED TO ½" GALVANIZED STEEL CORE, SUCH AS FARWEST CORROSION CONTROL COMPANY, TYPE PZ-150 OR APPROVED EQUAL
INBOARD
OUTBOARD
TYPICAL CATHODIC PROTECTION DETAIL
N.T.S.
WALL HALF PIPE OR TUBE (SEE NOTE 3)
INBOARD
OUTBOARD
PLAN
N.T.S.
NOTES:
1. ZINC FOR GALVANIZED PROTECTION SHALL BE FEDERAL SPECIFICATION MIL-A-18001H MATERIAL OR EQUAL.
2. PROVIDE ONE ZINC ANODE @ 30' O.C.
3. PROVIDE HALF ROUND STEEL PIPE OR SQUARE TUBE WITH COVER TO PROTECT ANODE
C6x8.2 @ 9'-2"± (EVERY OTHER SHEET PILE PAIR)
EL. 370
(2)-⅝"ø A307 BOLTS @ EACH POST
C6x8.2 RAIL
EL. 368 TOP OF SHEETPILE
NOTES:
1. STEEL CHANNELS TO CONFORM TO ASTM A36.
2. SHIM POSTS AS REQUIRED TO PROVIDE A VERTICAL AND STRAIGHT ALIGNMENT.
TYPICAL GUARD RAIL SYSTEM
HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL
DRAWING IS HALF-SIZE IF PLOTTED 11x17
PARSONS
MUESER RUTLEDGE CONSULTING ENGINEERS
NOTICE
REVISION
REFERENCE
DWG. NO.
APPROVALS
DATE
SHEET PILE WALL
MISCELLANEOUS DETAILS
Honeywell
C020

GENERAL NOTES

1. ELEVATIONS SHOWN REFER TO USGS NGVD 1929 DATUM.
2. BASE PLANS OBTAINED FROM TOPOGRAPHIC MAP PREPARED BY LOCKWOOD MAPPING COMPANY OFF AERIAL PHOTOGRAPHS TAKEN APRIL 14, 2000. ACTUAL CONFIGURATION OF CAUSEWAY, SURFACE FEATURES, ETC. AT THE TIME OF CONSTRUCTION MAY DIFFER FROM THAT SHOWN ON THE DRAWINGS.
3. BORING LOCATIONS AND LOGS ARE AVAILABLE FROM THE OWNER FOR REVIEW AND INTERPRETATION.
4. THE CAUSEWAY MAY NOT BE USED TO SUPPORT CONSTRUCTION LIVE LOADS UNTIL REPAIRS ARE MADE. CONSTRUCTION EQUIPMENT WILL REQUIRE MATS OR FRAMING TO SPREAD LOADS TO THE CAUSEWAY FRAMING. ENGINEER WILL REVIEW THE CONTRACTOR'S PROPOSAL AND DETERMINE REQUIRED REPAIRS.
5. PROVIDE CONTAINMENT OF ALL MATERIAL DURING ALL REMOVAL AND DEMOLITION WORK. PREVENT ANY DEBRIS FROM ENTERING ONONDAGA LAKE.
6. CONTRACTOR IS FULLY RESPONSIBLE FOR ALL SITE SAFETY, INCLUDING BUT NOT LIMITED TO A SAFETY RAIL ALONG THE SHEET PILE WALL.

TECHNICAL REQUIREMENTS

A. STEEL SHEET PILES

1. STEEL SHEET PILES SHALL BE ARBED AZ19-700, ASTM A572, GRADE 50.
2. SHEET PILES SHALL BE PROVIDED:
   a. IN PAIRS, WITH THE CENTER INTERLOCK FULL LENGTH SEAL WELDED.
   b. WITH INTERLOCK SEALANT IN ONE INTERLOCK OF EACH PAIR.
   c. WITH THE OUTBOARD FACE COAL TAR EPOXY COATED AS INDICATED IN THESE DRAWINGS.
3. FABRICATION
   a. SHEET PILE PAIRS SHALL BE SHOP SEAL WELDED IN A HORIZONTAL POSITION, WELDING PROCEDURES, INCLUDING ELECTRODE CLASSIFICATION AND REQUIRED PREHEAT TEMPERATURE, SHALL BE IN CONFORMANCE WITH AWS D1.1, LATEST EDITION. WELDERS AND WELDING OPERATORS SHALL BE QUALIFIED BY APPLICABLE TESTS AS DESCRIBED BY AWS D1.1.
   b. SEAL WELDS SHALL RECEIVE A 100% VISUAL EXAMINATION BY A QUALIFIED INSPECTOR RETAINED BY THE CONTRACTOR. THE INSPECTOR SHALL PROVIDE WRITTEN CERTIFICATION THAT ALL SEAL WELDS ARE IN CONFORMANCE WITH AWS D1.1 AND THE REQUIREMENTS OF THESE DRAWINGS.
   c. SHEET PILE PAIRS SHALL BE WELDED PRIOR TO APPLICATION OF COAL TAR EPOXY COATING.
4. THE VERTICALITY IN EACH PLANE OF THE SHEETPILES. SHALL NOT DEVIATE FROM THE PLUMB BY MORE THAN ONE PERCENT. PLAN LOCATION SHALL BE WITHIN 6 INCHES OF THEORETICAL.
   a. IF A PILE IS OUT OF LOCATION BEYOND 6 INCHES BUT LESS THAN 9 INCHES, SUBSEQUENT SHEET LOCATIONS SHALL BE ADJUSTED TO BRING THE ALIGNMENT BACK INTO TOLERANCE.
   b. IF A PILE IS OUT OF LOCATION BY MORE THAN 9 INCHES, IT SHALL BE EXTRACTED, RELOCATED AND REINSTALLED.
   c. IN NO CASE CAN A PILE BE INSTALLED INBOARD OF THE MAXIMUM THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER, REPRESENTED BY POINTS "A" THROUGH "P" ON THE PLANS.

   DURING THE SHEETPILE SETTING AND DRIVING, SURVEY LOCATIONS AND MEASURE VERTICALITY OF THE SHEETPILES TO CONFIRM TOLERANCES ARE BEING MET.
5. HANDLE STEEL SHEET PILING USING HANDLING HOLES OR LIFTING DEVICES. HANDLE STEEL SHEET PILES WITH CARE TO PREVENT DAMAGE. SUPPORT ON LEVEL BLOCKS OR RACKS SPACED NOT MORE THAN 10 FEET APART AND NOT MORE THAN 2 FEET FROM THE ENDS. SUPPORTS BETWEEN MULTIPLE LIFTS SHALL BE IN A VERTICAL PLANE. PROTECT STEEL SHEET PILING TO PREVENT DAMAGE TO COATINGS AND TO PREVENT CORROSION PRIOR TO INSTALLATION.
6. PILE HAMMER: USE A PILE IMPACT OR VIBRATORY HAMMER HAVING A CAPACITY SUITABLE FOR THE TOTAL WEIGHT OF THE PILE AND THE CHARACTER OF SUBSURFACE MATERIAL TO BE ENCOUNTERED. OPERATE HAMMER AT THE RATE(S) RECOMMENDED BY THE MANUFACTURER THROUGHOUT THE ENTIRE DRIVING PERIOD. REPAIR DAMAGE TO PILING CAUSED BY USE OF A PILE HAMMER.
7. DRIVE TEMPLATES: IT IS SUGGESTED THE CONTRACTOR PROVIDE TEMPLATE OR DRIVING FRAME SUITABLE FOR ALIGNING, SUPPORTING AND MAINTAINING SHEET PILING PLUMB IN THE CORRECT POSITION DURING SETTING AND DRIVING. USE A SYSTEM OF STRUCTURAL FRAMING SUFFICIENTLY RIGID TO RESIST LATERAL AND DRIVING FORCES AND TO ADEQUATELY SUPPORT THE SHEET PILING UNTIL DESIGN TIP ELEVATION IS ACHIEVED.
   a. TEMPLATES SHALL NOT MOVE WHEN SUPPORTING SHEET PILING. FIT TEMPLATES WITH WOOD BLOCKING TO BEAR AGAINST SHEET PILES AND HOLD THE SHEET PILE AT THE DESIGN LOCATION ALIGNMENT. PROVIDE OUTER TEMPLATE STRAPS OR OTHER RESTRAINTS AS NECESSARY TO PREVENT THE SHEETS FROM WARPING OR WANDERING FROM THE ALIGNMENT, OR RACKING ALONG THE ALIGNMENT.
   b. SHEET PILES COMPLETED AND DRIVEN TO FINAL TIP ELEVATION MAY BE WELDED TO ADJACENT COMPLETED SHEETS ABOVE EL. 365 IF REQUIRED TO LIMIT MOVEMENT OF COMPLETED SHEETS.
8. DRIVE SHEET PILES TO THE TIP ELEVATION(S) SHOWN ON THE CONTRACT DRAWINGS, OR DEEPER.
9. DO NOT DRIVE STEEL SHEET PILES UNTIL THE MUDLINE IS CLEAR OF DEBRIS AND OTHER MATERIALS HAVE BEEN REMOVED THAT MAY INTERFERE WITH STEEL SHEET PILE DRIVING. IF NECESSARY, PERFORM PRE-TRENCH EXCAVATION OR SPUD ALONG ALIGNMENT TO REMOVE SHALLOW OBSTRUCTIONS, RIP-RAP, ABANDONED PILES, ETC. REMOVE 72" AND 84" INTAKE PIPES AS DESCRIBED ELSEWHERE IN THIS DRAWING SET.
10. SPUDDING FOR OBSTRUCTIONS: SPUDDING FOR INSTALLATION OF SHEET PILES MAY BE USED. SPUDDING SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER. DISCONTINUE SPUDDING 5 FEET OR MORE ABOVE THE INDICATED TIP ELEVATIONS.
11. CUTTING AND SPLICING: PILES DRIVEN BELOW THE REQUIRED TIP ELEVATION AND PILES DAMAGED BY DRIVING AND CUT OFF TO PERMIT FURTHER DRIVING SHALL BE EXTENDED AS REQUIRED TO REACH THE TOP ELEVATION BY SPLICING AS APPROVED BY THE ENGINEER.
    a. ENDS OF PILES TO BE SPLICED SHALL BE SQUARED BEFORE SPLICING TO ELIMINATE DIPS OR CAMBER. SPLICE PILES WITH CONCENTRIC ALIGNMENT OF THE INTERLOCKS SO THAT THERE ARE NO DISCONTINUITIES, DIPS OR CAMBER AT THE ABUTTING INTERLOCKS.
    b. SPLICED PILES SHALL BE FREE SLIDING AND ABLE TO OBTAIN THE MAXIMUM SWING WITH CONTIGUOUS PILES.
    c. SPLICES SHALL DEVELOP THE FULL STRUCTURAL STRENGTH OF THE MEMBER AND SHALL BE FREE OF HOLES OR OTHER LEAKAGE OPENING.
12. WELDING: SHOP AND FIELD WELDING FOR SPLICING, SEAL WELDS AND OTHER CONDITIONS, QUALIFICATION OF WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS SHALL BE IN ACCORDANCE WITH AWS D1.1.
13. REMOVE AND REPLACE STEEL SHEET PILES FOUND TO BE OUT OF INTERLOCK, OUT OF TOLERANCE, DAMAGED OR OTHERWISE DEFICIENT AT NO ADDITIONAL COST TO THE OWNER.
14. PERFORM CONTINUOUS INSPECTION DURING SHEET PILE DRIVING. INSPECT ALL STEEL SHEET PILES FOR COMPLIANCE WITH TOLERANCE REQUIREMENTS. BRING ANY UNUSUAL PROBLEMS THAT MAY OCCUR TO THE ATTENTION OF THE ENGINEER.
15. MAINTAIN A PILE DRIVING RECORD FOR EACH SHEET PILE. INDICATE ON THE INSTALLATION RECORD INSTALLATION DATES AND TIMES, TYPE AND SIZE OF HAMMER, RATE OF OPERATION, TOTAL DRIVING TIME, DIMENSIONS OF DRIVING HELMET AND CAP USED, BLOWS REQUIRED PER FOOT FOR EACH FOOT OF PENETRATION, PILE LOCATIONS, PILE PLUMBNESS, TIP ELEVATIONS, GROUND ELEVATIONS, CUT-OFF ELEVATIONS, AND ANY REHEADING OR CUTTING OF SHEET PILES.
    RECORD ANY UNUSUAL SHEET PILE DRIVING PROBLEMS DURING DRIVING.
16. ANY HOLES IN THE SHEETS (LIFTING HOLES, ETC) BELOW ELEV. +365 SHALL BE COVERED WITH PLATE STEEL, SEAL WELDED AND COATED.
17. SUBMIT FOR REVIEW AND APPROVAL:
    a. COMPLETE DESCRIPTION, DRAWINGS AND DETAILS FOR THE PROPOSED TEMPLATE OR OTHER PROPOSED METHOD OF INSTALLING THE SHEETPILES WITHIN THE REQUIRED TOLERANCES.
    b. PROPOSED SEQUENCE OF INSTALLATION.
    c. COMPLETE DESCRIPTION OF ALL INSTALLATION EQUIPMENT AND APPURTENANCES. INCLUDING ANY PROPOSAL FOR LOADS ON THE CAUSEWAY.
    d. PILE DRIVING RECORDS.
    e. A SURVEYED RECORD DRAWING OF THE SHEET PILE ALIGNMENT INCLUDING COORDINATES OF TURNING POINTS, TIP ELEVATIONS AND DEVIATIONS FROM THEORETICAL LOCATIONS, ORIENTATIONS OR DIMENSIONS.
18. COAL TAR EPOXY COATING REQUIREMENTS:
    a. COAT STEEL SHEET PILES, CONNECTOR PILES AND FABRICATED CONNECTOR PILES WITH TWO COATS, 8 MILS DRY FILM THICKNESS (DFT)EACH, COAL TAR EPOXY. COATING SHALL EXTEND FROM THE LIMITS SHOWN, FOR EXTERIOR FACE OF THE SHEET PILES.
    b. COAL TAR EPOXY COATING SHALL BE "BITUMASTIC NO. 300-M" AS MANUFACTURED BY CARBOLINE OR APPROVED EQUAL.
    c. ALL SURFACES TO BE COATED SHALL BE SAND-BLASTED IN PREPARATION FOR APPLICATION OF THE COATING. SAND-BLASTING SHALL BE TO NEAR WHITE METAL, AT LEAST EQUIVALENT TO A COMMERCIAL BLAST AS DEFINED BY SSPC-SP-10. ALL SURFACES TO BE COATED MUST BE COMPLETELY DRY, FREE OF MOISTURE, SOIL, DUST AND GRIT AT THE TIME THE COATING IS APPLIED.
    d. APPLICATION OF THE COATINGS AND CURING REQUIREMENTS SHALL BE IN CONFORMANCE WITH THE MANUFACTURER'S REQUIREMENTS.
    e. WHERE WELDING, FASTENINGS OR OTHER WORK ARE TO BE ACCOMPLISHED AFTER INSTALLATION OF PILES, FIELD APPLIED PROTECTIVE COATS SHALL BE MADE AFTER SAME IS COMPLETED.
    f. THE CONTRACTOR SHALL APPOINT AND PAY FOR AN INDEPENDENT INSPECTION AND TESTING AGENCY, APPROVED BY THE ENGINEER, TO INSPECT AND CERTIFY THE COATING PROCEDURE AS FOLLOWS:
       - CERTIFY THAT THE STEEL HAS BEEN PREPARED FOR COATING IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATIONS AND ADDITIONAL REQUIREMENTS NOTED HEREIN.
       - CERTIFY THE THICKNESSES OF THE TWO EPOXY COATS AND THAT EACH COAT IS APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND TO THE DRY FILM THICKNESSES SPECIFIED.

B. SEALED INTERLOCK SHEET PILE

1. MATERIALS
   a. SEALANT SHALL BE SWELLSEAL GUNGRADE WA, HYDROPHILIC POLYURETHANE WATERSTOP, MANUFACTURED BY DENEEF CONSTRUCTION CHEMICALS, HOUSTON, TX. SEALANT SHALL BE INSTALLED USING THE DRY CURE METHOD, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, OR BELOW, WHICHEVER IS MORE STRINGENT.
   b. PROVIDE DENEEF TECHNICAL REPRESENTATIVE SITE VISIT TO REVIEW APPLICATION AND PRODUCT AT BEGINNING OF PRODUCTION WORK.
2. SEALANT APPLICATION
   a. STEEL SURFACE AND INTERLOCK VOID TO RECEIVE SEALANT SHALL BE FREE OF OIL, MOISTURE, SOIL, METAL SHAVINGS, OR OTHER CONTAMINANT.
   b. STEEL SURFACE TEMPERATURE SHALL BE ABOVE 45°F FOR 24 HOURS PRIOR AND 48 HOURS AFTER SEALANT APPLICATION.
   c. SEALANT SHALL BE SHOP APPLIED AND TOOLED TO CONFORM TO THE SHAPE OF THE INTERLOCK. THE TOOL SHALL BE CLEANED OF EXCESS SEALANT MATERIAL AFTER EACH INTERLOCK APPLICATION.
   d. SEALANT SHALL BE APPLIED AT A RATE AS DETERMINED BY THE ENGINEER ON THE BASIS OF THE MOCK UP JOINTS. APPLICATION RATES SHALL BE DOCUMENTED FOR EACH TUBE OF SEALANT APPLIED. CERTIFY THE PROPER AMOUNT OF SEALANT HAS BEEN APPLIED BEFORE DRIVING SHEETS.
   e. SEALANT SHALL BE ALLOWED TO AIR DRY CURE AT LEAST 24 HOURS PRIOR TO INSTALLATION.
   f. AFTER AIR DRYING, INTERLOCKS WITH SEALANT APPLIED SHALL BE COVERED DURING STORAGE AND TRANSPORT; COVER SHALL REMAIN IN PLACE UNTIL THE PILE IS LIFTED FOR PLACEMENT. STACK SHEETS SO WATER IS UNABLE TO PUDDLE WITHIN INTERLOCK. SHEETS SHALL REMAIN IN THIS ORIENTATION UNTIL LIFTED FOR PLACEMENT.
   g. IF SEALANT SWELLS BEFORE SHEET PILE IS PLACED, COVER AND DRY TO PERMIT SHRINKAGE, OR REPLACE WITH NEW, AND PLACE SHEETING WITH WET DRIVE METHOD.
3. SHEET PILE INSTALLATION
   a. THE BOTTOM OF EACH CLEAR INTERLOCK SHALL BE PLUGGED TO PREVENT SOIL ENTRY DURING DRIVING. INTERLOCK PLUG SHALL BE TIGHT FITTING AND SECURED IN PLACE TO PREVENT LOSS DURING HANDLING AND PLACEMENT. IF THE INTERLOCK PLUG IS LONGER THAN 2", IT SHALL BE KNOCKED OUT / DISPLACED BY ADJACENT SHEET.
   b. ANY SHEET PILE WITH INTERLOCK SEALANT APPLIED SHALL BE PLACED AND DRIVEN TO FINAL TIP ELEVATION WITHIN AN 8 HOUR PERIOD FROM THE TIME IT IS IN CONTACT WITH THE WATER.
   c. SHEETS WITH SEALANT APPLIED WHICH ARE NOT DRIVEN TO FINAL TIP WITHIN 8 HOURS SHALL BE REMOVED AND REPLACED WITH NEW SEALANT APPLIED.
   d. SHEETS REMOVED DUE TO 8 HOUR SEALANT LIMIT SHALL BE USED IN A LOCATION WHERE SEALANT IS NOT REQUIRED, OR THE SEALANT SHALL BE REMOVED BY SCRAPING AND REPLACED WITH NEW SEALANT APPLIED.
4. CONTRACTOR SUBMITTALS AND MOCK SEALED INTERLOCK JOINTS
   a. SUBMIT SHOP DRAWING, DETAILS, AND NOTES DEPICTING METHODS TO BE EMPLOYED TO CONSTRUCT A CONTINUOUS HYDRAULIC BARRIER INCLUDING SHEET PILE PLACEMENT AND DRIVING SEQUENCE, IDENTIFICATION OF SHEETS, LOCATION OF PLANNED/POTENTIAL INTERMEDIATE TERMINATIONS IN SEALED INTERLOCK SHEETS. NOTES SHALL ADDRESS SEALANT APPLICATION, STORAGE, HANDLING, DRIVING PROCEDURE AND SEQUENCE OF SHEET PLACEMENT.
   b. MOCK JOINTS: PREPARE THREE SEPARATE 3 FT LONG MOCK UP JOINTS TO DEMONSTRATE INTERLOCK PREPARATION, SEALANT APPLICATION AND TOOLING, PILE ASSEMBLY, AND SEALANT SWELL. ONE MOCK JOINT SHALL HAVE INTERLOCK PLUG APPLIED. SUBMERGE SHEETS IN WATER BATH, TO CONFIRM TOOLING, APPLICATION RATE AND SWELL SEAL. OWNER WILL EXAMINE MOCK JOINTS AT EACH PREPARATION STEP.
   c. SUBMIT QUANTITY COUNTS OF SEALANT TUBES USED PER SHEET PILE INTERLOCK TO CONFIRM APPLICATION RATE.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												

NOTICE

SCALE N.T.S.

GENERAL NOTES & REQUIREMENTS

Honeywell

DRAWN | DATE | CHK. | DATE

C021

C. CONSTRUCTION SURVEY

1. PROVIDE SURVEY DRAWING SEALED BY A LICENSED SURVEYOR, INDICATING LOCATION AND ELEVATION OF LAND SURVEY BENCHMARKS AND CONTROL POINTS.
2. ALL LOCATION SURVEYS, BENCHMARK, AND BASELINE SURVEYS SHALL BE PERFORMED BY A LICENSED SURVEYOR. ELEVATION MONITORING SURVEYS MAY BE PERFORMED BY A QUALIFIED TECHNICIAN UNDER THE DIRECTION AND REVIEW OF A LICENSED SURVEYOR.
3. SURVEY THE LOCATION AND ELEVATION OF THE TOP OF THE SHEET PILE WALL AT 50 FT O.C. MAX. SPACING. SURVEY POINTS SHALL BE PRISMS. PERFORM BASELINE SURVEY BEFORE PLACING FILL.
4. SURVEY (BASELINE AND MONITOR) DMP TARGETS, AT SCHEDULE SPECIFIED IN INSTRUMENTATION DRAWINGS.
5. SUBMIT OPTICAL SURVEY DATA (LOCATION, ELEVATION, AND MOVEMENT FROM BASELINE) WITHIN ONE WORK DAY AFTER SURVEY.

D. FILL PLACEMENT

1. CONSTRUCTION SEQUENCE
   a. PLACE AND ANCHOR REINFORCING GEOTEXTILE TYPE A OVER MUDLINE IN ADVANCE OF FILL PLACEMENT.
   b. ENCLOSE SHEET PILE DRIVING AND FILL PLACEMENT IN FLOATING SILT CURTAIN.
   c. PLACE LIGHTWEIGHT FILL TO ELEV. +365.
   d. WHERE LIGHTWEIGHT FILL EXTENDS BELOW ELEV. +357, DENSIFY FILL WITH VIBRTORY PROBES.
   e. PLACE LIGHTWEIGHT FILL IN CONTROLLED LIFTS (WITH COMPACTION) TO WORK PLATFORM SUBGRADE.
   f. PLACE WORK PLATFORM FILL; PITCH FOR DRAINAGE, AND CUT SHEET PILES FOR STORMWATER RELEASE.
   g. SURVEY BULKHEAD DURING FILL PLACEMENT. PLACE INSTRUMENTATION AND PERFORM BASELINE SURVEYS AS CONSTRUCTION PROGRESSES.
2. REINFORCING GEOTEXTILE TYPE A
   a. JOINTS PARALLEL TO THE SHORELINE SHALL BE SEWN: JOINTS PERPENDICULAR TO THE SHORELINE MAY BE CONSTRUCTED WITH AN OVERLAP.
   b. OVERLAP JOINTS SHALL BE 3 FT OR WIDER. OVERLAP JOINTS SHALL BE PINNED IN PLACE AND ANCHORED TO MAINTAIN TENSION IN THE GEOTEXTILE AND TO MAINTAIN BOTTOM COVERAGE WHEN FILLING.
   c. PLACE SEWN PANELS SIZED TO EACH COVERAGE AREA AND OVERLAP JOINT. CONTRACTOR SHALL DETERMINE WIDTH OF SEWN PANELS.
   d. CONTRACTOR SHALL LAY OUT GEOTEXTILE A PANELS AND DETERMINE SHEET PLACEMENT METHODS. SEE "SUBMITTALS."

e. SHORELINE EDGE OF ANY PANEL SHALL BE ANCHORED BEFORE PLACING FILL ON THE PANEL.
   f. PLACE TAG LINES WITH FLOATS AT SUBMERGED EDGES OF EACH PANEL TO INDICATE EDGE LOCATION.
   g. MARK POSITION OF PANEL AFTER PLACEMENT AND OBSERVE CHANGES AS FILL IS PLACED. LOCATE SUBSEQUENT PANEL TO MAINTAIN MINIMUM 3 FT OVERLAP WIDTH.
3. LIGHTWEIGHT FILL
   a. PLACE LIGHTWEIGHT FILL WITH LOW PRESSURE DOZER EQUIPMENT (100 PSF MAXIMUM BEARING PRESSURE) TO ELEV. +365.
   b. OUTBOARD OF CAUSEWAY, PROHIBIT TRUCK TRAFFIC WITHIN 15 FT OF SHEET PILE BULKHEAD. EAST OF CAUSEWAY, PROHIBIT TRUCK TRAFFIC WITHIN 25 FT OF BULKHEAD.
   c. SOUND MUDLINE AT TOE OF ACTIVE FILL SLOPE EVERY 20 FT OF ADVANCE. CONTROL FILL SLOPE BELOW WATER, AND PLACE FILL BEYOND MUDWAVE TO ENCAPSULATE AND TRAP MUDWAVES.
   d. PROVIDE 15 ROLLS OF 13 FT. WIDE TENSAR Bx1200 GEOGRID ON SITE AS CONTINGENCY FOR MUDWAVE ABATEMENT.
4. LIGHTWEIGHT FILL DENSIFICATION
   a. DENSIFY FILL WITH VIBRATORY PROBES WHERE LIGHTWEIGHT FILL EXTENDS BELOW ELEV. +357.
   b. VIBRATORY PROBES SHALL BE PERFORMED AT 5 FT SPACING OVER THE ENTIRE FILL SURFACE BEFORE PREPARATION OF LIGHTWEIGHT FILL SUBGRADE FOR WORK PLATFORM.
   c. A VIBRATORY PROBE IS DEFINED AS VIBRATORY HAMMER DRIVING AN H-PILE THROUGH LIGHTWEIGHT FILL TO PROBE DEPTH; HOLDING THE H-PILE AT THE PROBE DEPTH WITH THE HAMMER OPERATING FOR 90 SECONDS; AND EXTRACTING THE H-PILE TO THE SURFACE WITH THE HAMMER OPERATING.
   d. MARK EACH PROBE LOCATION WITH A STAKE.
   e. AT EACH PROBE, DETERMINE DEPTH TO GEOTEXTILE A – ESTIMATED PROBE DEPTH SHALL BE 2 FT ABOVE GEOTEXTILE A;
   f. PROHIBIT PROBE PENETRATION THROUGH GEOTEXTILE A.
   g. PROBES SHALL NOT BE CLOSER THAN 3 FT FROM THE SHEET PILE BULKHEAD OR THE CAUSEWAY GIRDER.
   h. PROBES WITHIN 25 FT OF THE BULKHEAD SHALL BE ADVANCED FROM THE BULKHEAD TOWARDS THE SHORELINE.
   i. IF FILL IS NOT CONTAINED BY SHEET PILE OR THE SHORELINE, THE PROBES SHALL BE 10 FT OR MORE INBOARD OF ANY EXPOSED FACE.
   j. AFTER COMPLETION OF VIBRATORY PROBES IN ANY AREA, ADD LIGHTWEIGHT FILL AND RE-GRADE TO RESTORE ELEV. +365+ .
5. WORK PLATFORM
   a. PROOF ROLL LIGHTWEIGHT FILL AT ELEV. +365+ .
   b. PLACE TWO CONTROLLED LIFTS OF LIGHTWEIGHT FILL BELOW GEOTEXTILE B. CONTROLLED LIGHTWEIGHT FILL SHALL OBTAIN 98 % MAXIMUM DRY UNIT WEIGHT (ASTM D 698 SATURATED SURFACE DRY).PERFORM SAND CONE TEST (OR NUCLEAR DENSITY TEST IF APPROVED) TO DEMONSTRATE COMPACTION FOR EACH LIFT (ONE TEST EACH 20,000 SQUARE FEET OF SURFACE AREA) OR CALIBRATE AND COUNT ROLLER PASSES AS APPROVED BY THE ENGINEER.
   c. SHAPE SUBGRADE AT ELEV. 366+ BELOW WORK PLATFORM OR ADJUST WORK PLATFORM SURFACE FOR DRAINAGE TO LAKE.
   d. PLACE GEOTEXTILE B OVER COMPACTED LIGHTWEIGHT FILL OR ADJUST WORK PLATFORM SURFACE. JOINTS PARALLEL TO THE SHORELINE SHALL BE SEWN; JOINTS PERPENDICULAR TO THE SHORELINE MAY BE CONSTRUCTED WITH A 2 FT OVERLAP.
   e. WITHIN 15 FT OF CAUSEWAY GIRDER, LIGHTWEIGHT FILL AND WORK PLATFORM FILL ABOVE THE BOTTOM OF THE CAUSEWAY GIRDER SHALL BE PLACED IN 1 FT MAXIMUM LIFTS WRAPPED IN GEOTEXTILE B TO PREVENT LATERAL LOADS ON GIRDER.
   f. PLACE WORK PLATFORM SURFACE IN TWO CONTROLLED LIFTS COMPACTED TO 98 % MAXIMUM DRY UNIT WEIGHT (ASTM D 698), PERFORM SAND CONE TEST TO DEMONSTRATE COMPACTION (ONE TEST EACH 10,000 SQUARE FEET OF SURFACE AREA).
   g. AFTER PLACING WORK PLATFORM AT ELEV. +367+:
      1) OUTBOARD OF CAUSEWAY, PLACE FENCE OR OTHER BARRICADE TO EXCLUDE TRUCK TRAFFIC WITHIN 15 FT OF BULKHEAD.
      2) EAST OF CAUSEWAY, PLACE FENCE OR OTHER BARRICADE TO EXCLUDE TRUCK TRAFFIC WITHIN 25 FT OF BULKHEAD.
      3) PLACE CONCRETE "JERSEY BARRIERS" TO PROTECT EACH INSTRUMENT LOCATION.
6. SUBMITTALS

   SUBMIT 20 WORK DAYS PRIOR TO PLACING FILL:
   a. SUBMIT SHOP DRAWINGS FOR GEOTEXTILE A PANEL LAYOUT, AND A WORK PLAN FOR GEOTEXTILE A, COVERING: GEOTEXTILE ASSEMBLY, LAYOUT, FIELD PLACEMENT, FIELD JOINTS, AND LOCATION CONTROL.
   b. SUBMIT WORK PLAN FOR FILL PLACEMENT, ADDRESSING: MUDLINE MONITORING, AND FILL PLACEMENT. INDICATE CONTINGENCY FILL PLACEMENT TO CONTROL MUDWAVE PROPAGATION. PROVIDE SPECIFICATIONS OF EQUIPMENT WHICH WILL BE USED TO PLACE AND COMPACT LIGHTWEIGHT FILL.

   RECORD DRAWINGS, SUBMITTED MONTHLY AS PROGRESS REPORTS:
   c. RECORD DRAWING ILLUSTRATING AS-BUILT LOCATION OF VIBRATORY PROBES, GIVING PROBE DATE AND DEPTH, TO DOCUMENT VIBRATORY PROBES WERE PERFORMED OVER THE ENTIRE SURFACE OF THE FILL AT 5 FT MAXIMUM SPACING.
   d. SUBMIT MATERIAL TEST DATA FOR LIGHTWEIGHT FILL. PROVIDE MANUFACTURER CERTIFICATION OF MATERIAL SPECIFIC GRAVITY, UNIT WEIGHT AND GRADATION PROPERTIES FOR EACH 2,000 TONS OF MATERIALS DELIVERED.
   e. SUBMIT MATERIAL TEST DATA FOR WORK PLATFORM SURFACE FILL.
7. MATERIALS
   a. REINFORCING GEOTEXTILE A SHALL BE BIAXIAL MIRAFI HP-350 OR EQUAL. SEWN JOINTS SHALL DEVELOP TENSILE CAPACITY OF THE GEOTEXTILE AT 5% STRAIN.
   b. REINFORCING GEOTEXTILE B SHALL BE BIAXIAL MIRAFI HP-350 OR EQUAL.
   c. LIGHTWEIGHT FILL SHALL BE COARSE EXPANDED SHALE AGGREGATE HAVING A SPECIFIC GRAVITY OF 1.5 +0.05 AND A TOTAL WEIGHT NO GREATER THAN 68 LBS/CF "SATURATED SURFACE DRY" WHEN COMPACTED IN ACCORDANCE WITH ASTM D 698 (STANDARD PROCTOR COMPACTION EFFORT). LIGHTWEIGHT FILL SUPPLIER SHALL PROVIDE TESTING AND CERTIFICATION OF SPECIFIED MATERIAL PROPERTIES.
   d. STRUCTURAL FILL FOR WORK PLATFORM SHALL BE STONE, SAND AND GRAVEL IN CONFORMANCE WITH NYSDOT SECTION 304 OPTION D, TYPE 4 SUBBASE COURSE, INCLUDING REQUIREMENTS FOR MATERIAL, PLACEMENT AND COMPACTION.
   e. CONTROLLED LOW STRENGTH MATERIAL (CLSM) SHALL BE IN CONFORMANCE WITH NYSDOT SECTION 204, NO FLYASH.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUSSER RUTLEDGE CONSULTING ENGINEERS

NOTICE

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

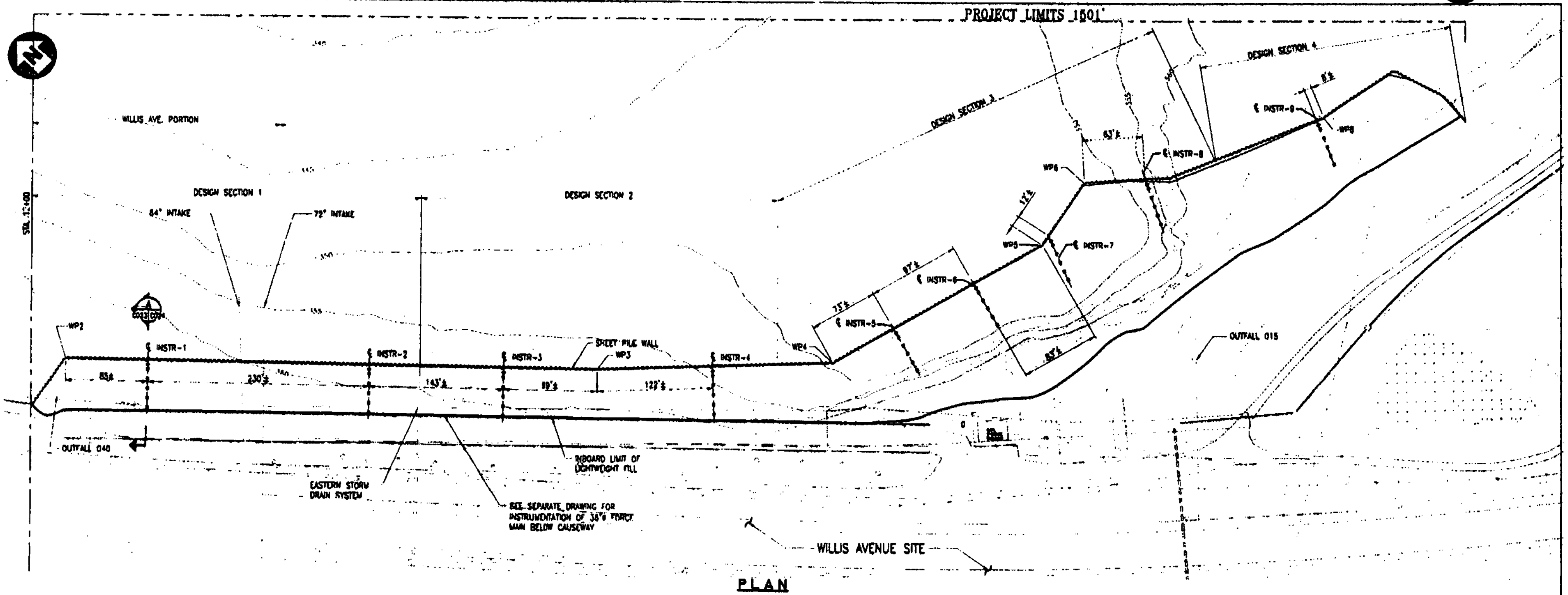
JOB NO.
CONTRACTOR'S JOB NO.
SCALE

GENERAL NOTES & REQUIREMENTS

Honeywell

DRAWN | DATE | CHK. | DATE

C022



PLAN

SCALE: 1"=50'

INSTRUMENTATION GENERAL NOTES:

1. NINE INSTRUMENT CLUSTERS ARE PLANNED. EACH CLUSTER INCLUDES THE FOLLOWING INSTRUMENTS:

A. 1 SHEET PILE WALL INCLINOMETER

B. 1 DEFORMATION MONITORING POINT (DMP) CONSISTING OF A REFLECTIVE PRISM MOUNTED ON AN L-BRACKET.

C. 1 TILTMETER

D. BOREHOLE INSTRUMENTS:

1) 1 INCLINOMETER

2) 1 BOREHOLE EXTENSOMETER

3) 4 VIBRATING WIRE PIEZOMETERS

E. 8 SETTLEMENT PLATES

F. IN ADDITION, DEFORMATION MONITORING POINTS SHALL BE PLACED AT MAXIMUM 50 FT SPACING ALONG THE ALIGNMENT.

2. INSTRUMENT CABLES FROM EACH CLUSTER WILL BE GROUPED USING CONDUIT AND JUNCTIONS BOXES, AND CONNECTED TO DATA LOGGERS AT TWO LOCATIONS SELECTED BY THE INSTRUMENTATION CONTRACTOR. IN THE COMPLETED SYSTEM POWER WILL BE PROVIDED BY SOLAR PANEL. REMOTE DATA ACQUISITION WILL BE BY MODEM.

3. INSTRUMENTS SHALL BE INSTALLED AS SOON AS PRACTICAL IN THE CONSTRUCTION SEQUENCE.

4. THE INSTRUMENTATION CONTRACTOR SHALL:

A. PROVIDE INSTRUMENTS.

B. PROVIDE TECHNICAL SUPPORT AND INSPECTION OF INSTRUMENT INSTALLATIONS BY THE BULKHEAD CONTRACTOR.

C. PROVIDE DRILLING CREW, RIG, AND SUPPLIES FOR BOREHOLE INSTRUMENT INSTALLATIONS.

D. INSTALL, ASSEMBLE, CONNECT, AND MAINTAIN INSTRUMENTS.

E. VERIFY EQUIPMENT FUNCTION, COLLECT AND SUMMARIZE DATA.

5. THE BULKHEAD CONTRACTOR SHALL:

A. PROVIDE EQUIPMENT SUPPLIES AND LABOR SUPPORT.

B. PROTECT EQUIPMENT INSTALLATIONS WITH CONCRETE BARRIERS AND REPAIR OR REPLACE INSTRUMENT OR INSTRUMENT COMPONENTS DAMAGED AS A RESULT OF BULKHEAD CONSTRUCTION OR FILLING OPERATIONS.

C. SUBMIT DETAILS OF SUPPLIES AND INSTALLATION WORK TO BE PERFORMED IF DIFFERENT FROM DETAILS PROVIDED ON THE CONTRACT DRAWINGS.

D. INCLUDE INSTALLATION OF EACH INSTRUMENT CLUSTER ON CONSTRUCTION SCHEDULE SUBMITTALS.

6. PROVIDE ALL LAND SURVEY BY A LICENSED SURVEYOR FOR INSTRUMENT LOCATION (X, Y, Z) DURING CONSTRUCTION, AND SURVEY INSTRUMENT LOCATIONS EIGHT TIMES (THREE MONTH INTERVALS) AFTER COMPLETING ENTIRE WORK PLATFORM TO ELEV. +367. SURVEY IN ACCORDANCE WITH NOTES ON DRAWING C022.

LEGEND

℄ INSTR-1 – INSTRUMENTATION CLUSTER ENLARGED PLAN SEE DWG. C034 (TYPICAL)

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

NOTICE

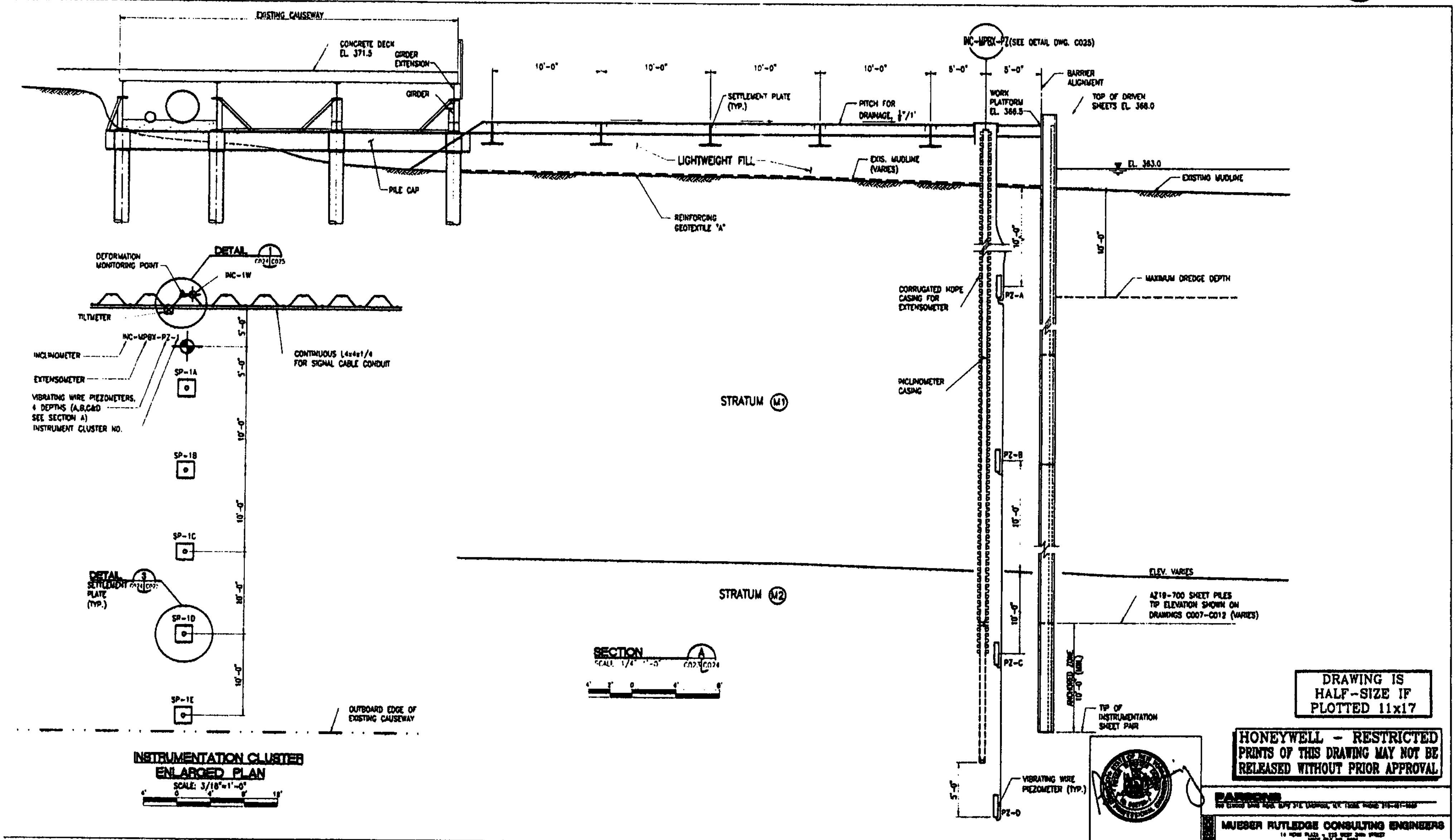
NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
-	-	-	-				-												

INSTRUMENTATION PLAN AND NOTES

SCALE 1"=50'-0"

Honeywell

C023



INSTRUMENTATION CLUSTER ENLARGED PLAN

SCALE: 3/16"=1'-0"

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

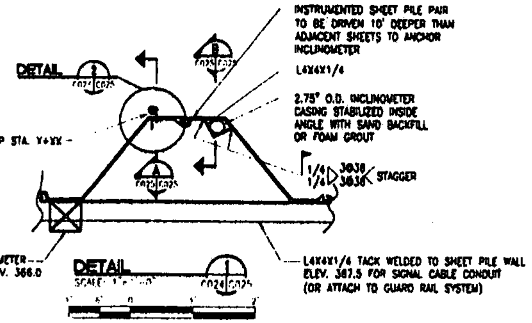
MUESER RUTLEDGE CONSULTING ENGINEERS

Honeywell

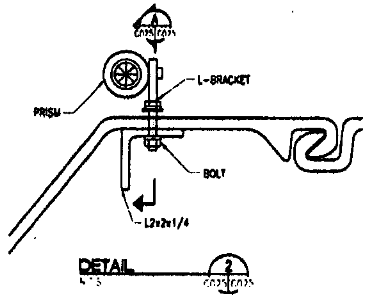
INSTRUMENTATION PARTIAL PLAN AND SECTION

SCALE: AS SHOWN

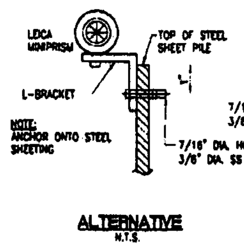
C024



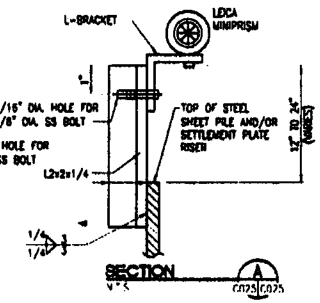
DETAIL 1



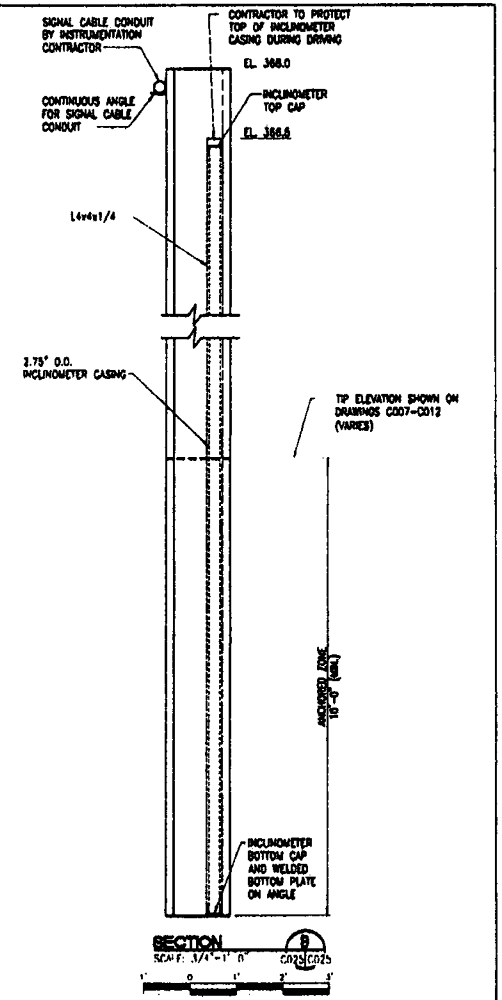
DETAIL 2
N.T.S.



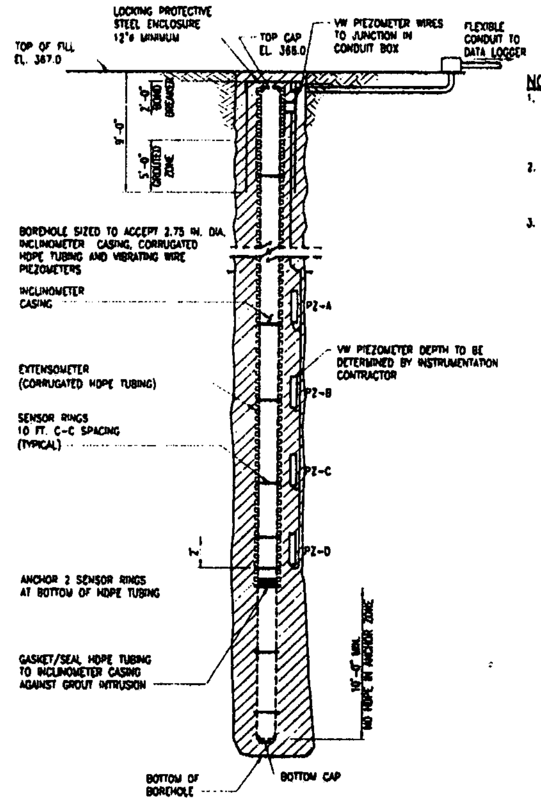
ALTERNATIVE
N.T.S.



SECTION A
N.T.S.



SECTION B
SCALE: 3/4"=1'-0"

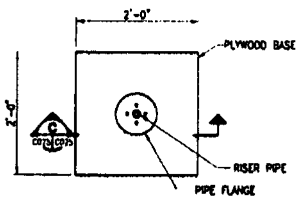


INCLINOMETER, EXTENSOMETER, PIEZOMETER CLUSTER DETAIL
N.T.S.

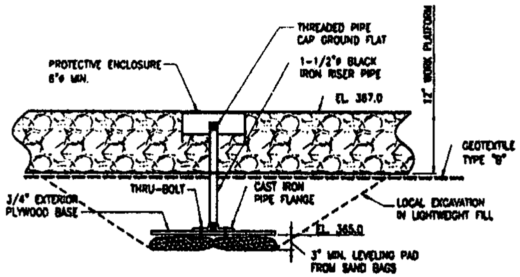
NOTES:

1. INCLINOMETER AND EXTENSOMETER CASING WILL BE 2.75 INCH O.D. ABS CASING WITH FOUR MACHINED LONGITUDINAL GROOVES AND 3-INCH I.D. CORRUGATED HDPE PIPE, RESPECTIVELY. EXTENSOMETER SENSOR RINGS WILL BE STAINLESS STEEL AS RECOMMENDED BY THE MANUFACTURED.
2. PIZOMETERS WILL BE VIBRATING WIRE WITH SUFFICIENT CABLE LENGTH TO EXTEND TO ELEV. 375 IF NECESSARY, ALLOWING FOR SOME FREE LENGTH OF CABLE FOR CONNECTION TO DATA LOGGER AT THE GROUND SURFACE.
3. TREMIE GROUT WILL BE PLACED IN THE ANNULAR SPACE BETWEEN THE BOREHOLE WALL AND THE HDPE PIPE, BUT NOT BETWEEN THE HDPE PIPE AND THE INCLINOMETER CASING. GROUT WILL BE PROPORTIONED AS NOTED.

GROUT PROPORTIONS
1 BAG PORTLAND CEMENT (94#)
40 TO 50 GALLONS WATER
2/3 BAG BENTONITE (30 TO 35#)
MIX CEMENT AND WATER FIRST, THEN ADD BENTONITE



SETTLEMENT MONITORING PLATE
DETAIL 3
N.T.S.



SECTION C
N.T.S.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL - RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

INSTRUMENTATION SECTIONS AND DETAILS

Honeywell

C025

WILLIS AVE./SEMET TAR BEDS IRM
HYDRAULIC BARRIER WALL

ADDENDUM 1

February 15, 2008

1. **CO18** TYPICAL SHEET PILE DETAIL

Add "Coal Tar Epoxy coating inboard side and outboard side"

2. **CO20** TYPICAL CATHODIC PROTECTION DETAIL

Replace Note 2 with:

Provide one anode at 30 ft oc inboard and one anode at 30 ft oc outboard (alternating sides at approximately 15 ft spacing.)

3. **CO20** TYPICAL CATHODIC PROTECTION DETAIL

Note 3, Replace "Steel" with "PVC or other non-conductive material"

Note 3, add " Drill 1-inch holes at 6-inch spacing each way to provide free groundwater connectivity.

4. **C021** TECHNICAL REQUIREMENTS

Note A.18.a. add: "And the inboard face of the sheet piles."

5. **CO21** TECHNICAL REQUIREMENTS

Note B. Sealed Interlock Sheet Pile
2. Sealant Application

Note c. Replace Note with:
"Sealant shall be placed in the protected corner of the interlock (Rate= one volumetric ounce per lineal foot)and tooled to coat the steel walls. The tool shall be cleaned of excess sealant material after each interlock application."

6. **CO21** TECHNICAL REQUIREMENTS

Note B. Sealed Interlock Sheet Pile
2. Sealant application

Note e. Revise 24 hours to 72 hours

PRIVELEGED AND CONFIDENTIAL

APPENDIX B

PLAXIS - Finite Element Code for Soil and Rock Analyses

Project description : Soil Properties **PLAXIS 8.x**

User name : Mueser Rutledge Consulting Engineers

Project name : ds2 undrained d Date : 1/30/2008

Output : Soil and Interfaces Info - Mohr-Coulomb Step : 219 Page : 1

ID	Name	Type	γ_{unsat} [lb/ft^3]	γ_{sat} [lb/ft^3]	k_x [ft/day]	k_y [ft/day]	ν [-]	E_{ref} [lb/ft^2]	c_{ref} [lb/ft^2]	φ [°]	ψ [°]
1	F1	Drained	120.0	125.0	2.8000	2.8000	0.30	4E5	0.0	32.0	0.0
2	LW Fill	Drained	60.0	82.4	2.8000	2.8000	0.30	5E5	0.0	40.0	8.0
3	SILT	Drained	105.0	105.0	0.2800	0.2800	0.25	1E5	200.0	20.0	0.0
4	F2	Drained	110.0	110.0	0.2800	0.2800	0.15	1E5	100.0	25.0	0.0
5	M1	Drained	105.0	105.0	0.0300	0.0300	0.25	40000.0	240.0	0.0	0.0
6	M2	Drained	117.0	117.0	3.0000E-3	3.0000E-3	0.25	60000.0	550.0	0.0	0.0
7	RipRap	Drained	140.0	140.0	2.8000	2.8000	0.30	4E5	0.0	30.0	0.0
8	F2 Undrained	Undrained	110.0	110.0	0.2800	0.2800	0.15	1E5	100.0	25.0	0.0
9	M1 Undrained	Undrained	105.0	105.0	0.0300	0.0300	0.25	40000.0	240.0	0.0	0.0
10	M2 Undrained	Undrained	117.0	117.0	3.0000E-3	3.0000E-3	0.25	60000.0	550.0	0.0	0.0
11	Silt - Undrained	Undrained	105.0	105.0	0.2800	0.2800	0.25	1E5	200.0	20.0	0.0

PLAXIS - Finite Element Code for Soil and Rock Analyses

Project description : Soil Properties

User name : Mueser Rutledge Consulting Engineers

Project name : ds2 undrained d

Output : Soil and Interfaces Info - Mohr-Coulomb

PLAXIS 8.x

Date : 1/30/2008

Step : 219 Page : 2

ID	E_{incr} [lb/ft^3]	c_{incr} [lb/ft^3]	y_{ref} [ft]	T-Strength [lb/ft^2]	R_{inter} [-]
1	0.0	0.0	0.0	0.0	0.67
2	0.0	0.0	0.0	0.0	0.67
3	0.0	0.0	0.0	0.0	0.50
4	0.0	0.0	0.0	0.0	0.50
5	0.0	0.0	0.0	0.0	0.50
6	0.0	0.0	0.0	0.0	0.50
7	0.0	0.0	0.0	0.0	0.67
8	0.0	0.0	0.0	0.0	0.50
9	0.0	0.0	0.0	0.0	0.50
10	0.0	0.0	0.0	0.0	0.50
11	0.0	0.0	0.0	0.0	0.50

PLAXIS - Finite Element Code for Soil and Rock Analyses

Project description	: FE Steel Sheeting Properties	**PLAXIS 8.x**
User name	: Mueser Rutledge Consulting Engineers	
Project name	: ds2 undrained d	Date : 1/30/2008
Output	: Material data sets - Plates	Step : 219 Page : 1

ID	Name	Type	EA [lb/ft]	EI [lbft^2/ft]	w [lb/ft^2]	ν [-]	M_p [lbft/ft]	N_p [lb/ft]
1	AZ 19-700	Elastic	2.064E8	6.008E7	53.8	0.30	1E15	1E15

MUESER RUTLEDGE CONSULTING ENGINEERS

File No.: 9801

Made by: JR Date: 11/14/07

FOR Willis/Semet

Checked by: ______ Date: ______

SUBJECT: TABLE - 1 Soil Parameters

Layer	γ (pcf)	γ' (pcf)	c (psf)	φ(°)	ka	Kp	Ko
Fill	125.0	125.0	0	30	0.34	3.00	0.50
Fill wet	125.0	62.6	0	30	0.34	3.00	0.50
Silt	105.0	42.6	200	20	0.51	2.04	0.66
F2	110.0	47.6	100	25	0.42	2.46	0.58
M1	105.0	42.6	240	0	1.00	1.00	0.55
M2	117.0	54.6	550	0	1.00	1.00	0.48

For active pressures, assume β=3°

$$K_a = \frac{\cos(\beta) - \sqrt{\cos^2(\beta) - \cos^2(\phi)}}{\cos(\beta) + \sqrt{\cos^2(\beta) - \cos^2(\phi)}}$$ Rankine

$$K_p = \tan\left(45 + \frac{\phi}{2}\right)^2$$ Rankine

$$K_o = 1 - \sin(\phi)$$ Jaky

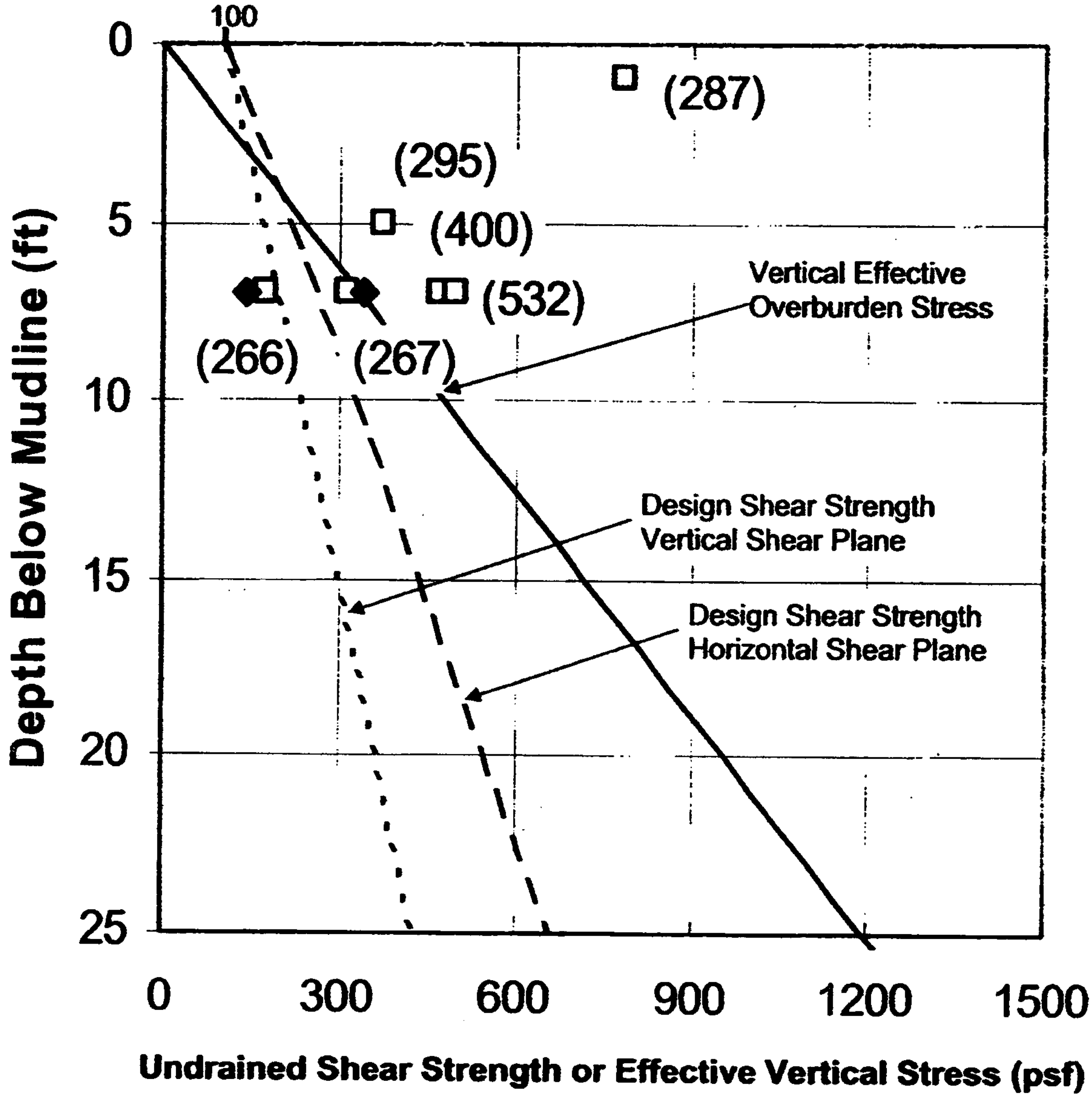
For M1 and M2, Assume normally consolidated and use average value of :

$$K_{o,nc} = 0.4 + 0.007\ (I_p)$$ (Brooker and Ireland, 1965)

$$K_{o,nc} = 0.19 + 0.233 * \log(I_p)$$ (Alpan, 1967)

$$K_{o,nc} = 0.44 + 0.0042 * I_p$$ (Holtz and Kovacs, 1981)

STRATUM F2
(SOLVAY WASTE)



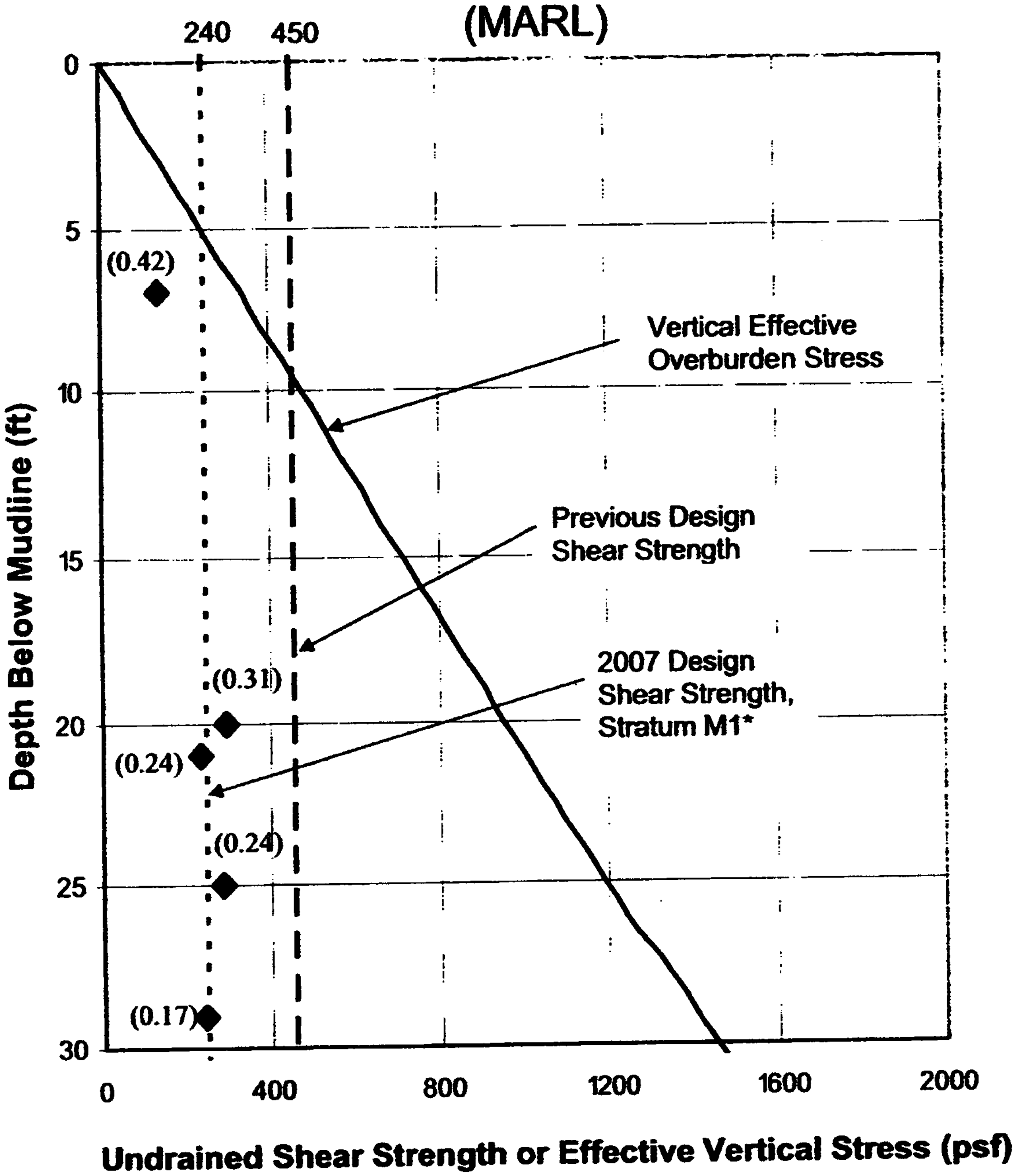
LEGEND

- □ CU Laboratory Testing Data (Consolidation Pressure, psf)
- ◆ UU Laboratory Testing Data
- ——— Vertical Effective Stress
- — — Design Strength (Horizontal Shear Plane)
- - - - Design Strength (Vertical Shear Plane)

Unconsolidated, Undrained (UU) Laboratory Testing Data provided by Honeywell. Laboratory testing performed by Geotesting Express.

WILLETS / SEMET SITE			
SYRACUSE		NEW YORK	
MUESER RUTLEDGE CONSULTING ENGINEERS 14 PENN PLAZA - 225 W 34^{TH} STREET, NEW YORK NY 10122			
SCALE GRAPHIC	MADE BY: JR CH'KD BY:	DATE: 08-07-07 DATE:	FILE No. 9801
UNDRAINED STRENGTH F2 STRATUM			FIGURE No. 3

STRATUM M1
(MARL)



* Design Shear Strength selected based on UU Test data. The selected strength translates to approximately a C/P' = 0.20.

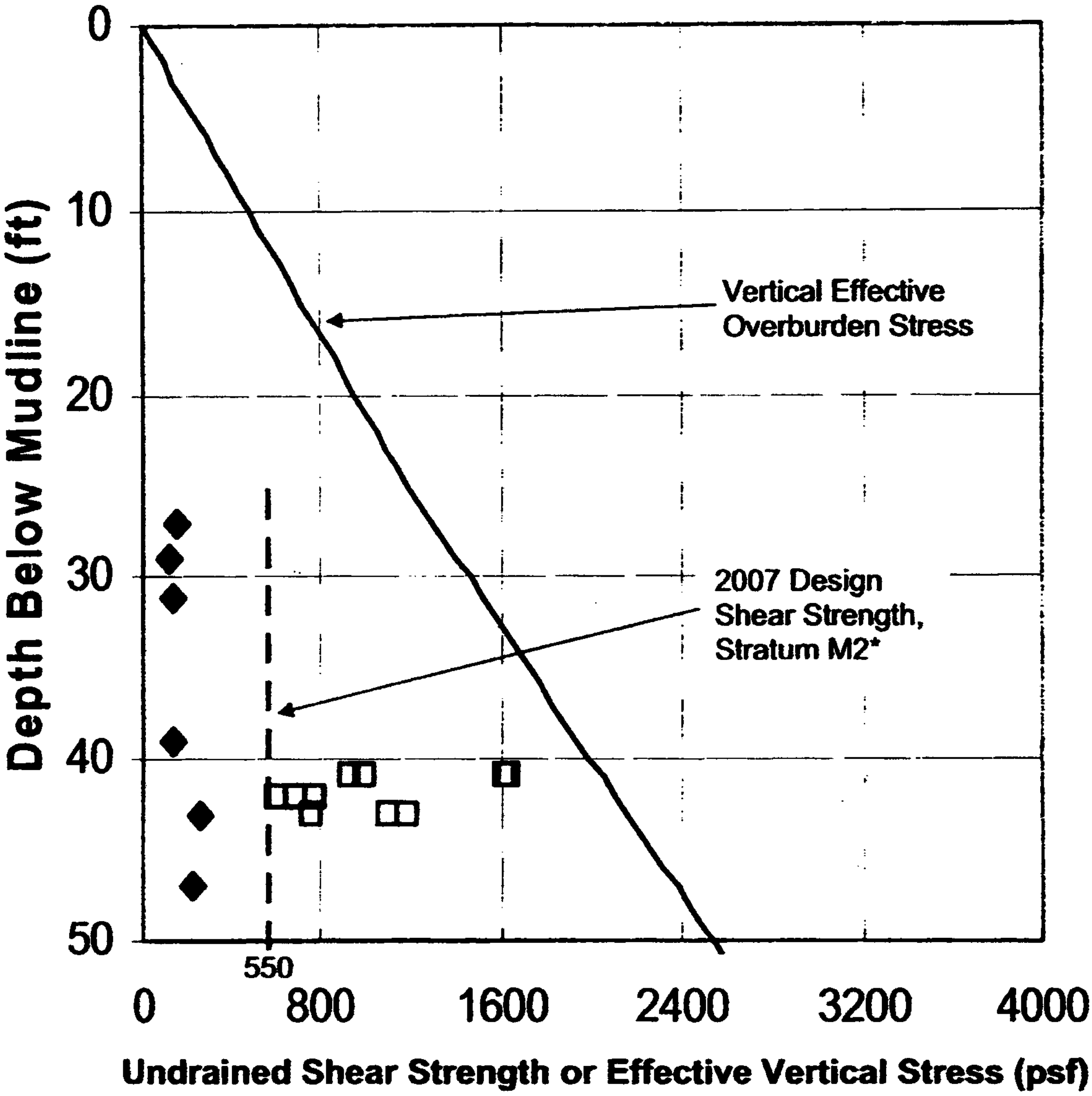
LEGEND

- ◆ UU Laboratory Testing Data (c/p' ratio)
- ——— Vertical Effective Stress
- — — — Design Shear Strength (6-20-07)
- ········· Proposed Design Shear Strength

Unconsolidated, Undrained (UU) Laboratory Testing Data provided by Honeywell. Laboratory testing performed by Geotesting Express.

WILLETS / SEMET SITE			
SYRACUSE			NEW YORK
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W 34TH STREET, NEW YORK NY 10122			
SCALE	MADE BY: JR	DATE: 09-07-07	FILE No.
GRAPHIC	CH'KD BY:	DATE:	9801
UNDRAINED STRENGTH M1 STRATUM			FIGURE No. 4

STRATUM M2
(SILT AND CLAY)



* Design Shear Strength selected based on C/P' = 0.25 at the approximate depth of the failure plane in Stratum M2.

LEGEND

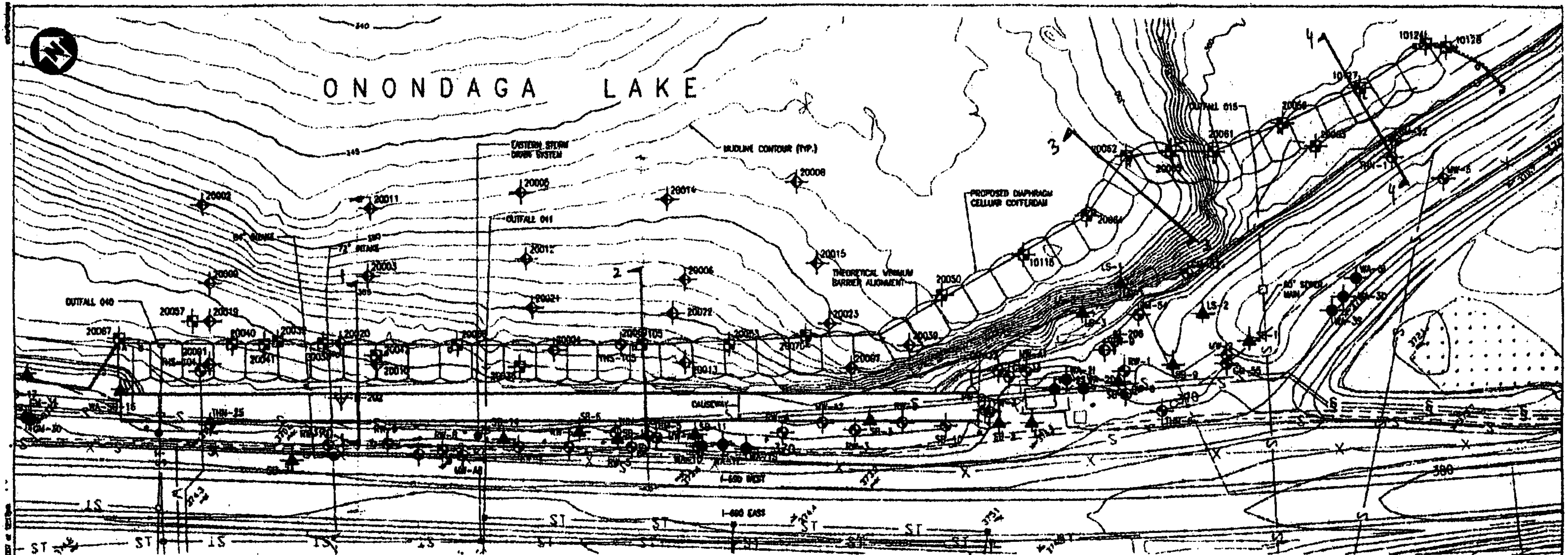
- □ CU Laboratory Testing Data
- ◆ UU Laboratory Testing Data
- —— Effective Vertical Stress
- – – Design Strength, c = 550 psf

Unconsolidated, Undrained (UU) and Consolidated, Undrained (CU) Laboratory Testing Data provided by Honeywell. Laboratory testing performed by Geotesting Express.

WILLETS / SEMET SITE			
SYRACUSE			NEW YORK
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W 34^{TH} STREET, NEW YORK NY 10122			
SCALE	MADE BY: JR	DATE: 09-07-07	FILE No.
GRAPHIC	CH'KD BY:	DATE:	9801
UNDRAINED STRENGTH M2 STRATUM			FIGURE No. 5

PRIVELEGED AND CONFIDENTIAL

APPENDIX C



LEGEND

- O'BRIEN AND GERE 2001
- O'BRIEN AND GERE 1991
- O'BRIEN AND GERE 1997
- GERAGHTY AND MILLER 1979-1981
- ACKENHEIL AND ASSOCIATES 1978
- EXISTING BORINGS/MONITORING OR RECOVERY WELL
- MRCE BORINGS MADE IN 2003 AND 2004
- EXISTING BORINGS
- PARSONS WATER BORINGS 2006
- CONSTRUCTION BORINGS
- PARSONS 2007 BORINGS

NOTES:

1. THE HORIZONTAL DATUM IS NAD-83, NEW YORK CENTRAL. THE COORDINATES ARE CONVERTED FROM METERS TO FEET.
2. THE VERTICAL DATUM IS NAVD-88 AND IS BASED ON NYSDOT BENCHMARKS.
3. BASE MAP OBTAINED FROM TOPOGRAPHIC MAP PREPARED BY LOCKWOOD MAPPING COMPANY, OFF AERIAL PHOTOGRAPHS TAKEN APRIL 14, 2000.
4. LAKE WATER LEVEL IS EL. +363.
5. MUDLINE SOUNDING SURVEY BY CR ENVIRONMENTAL, INC., OCTOBER, 2006.
6. FIELD VERIFICATION OF EXISTING CONDITIONS WHICH EFFECT THE WORK IS REQUIRED BY THE CONTRACTOR.

GENERAL LEGEND

- FORMER TANKS
- FENCE
- TREE/SHRUB
- WOODED AREA
- CONCRETE HEADWALL
- MW-14D MONITORING WELL LOCATION
- TRANSITION SUMP
- ELECTRICAL PULL BOX
- COLLECTION PIPING CLEANOUT
- APPROXIMATE RAILROAD LOCATION
- EDGE OF WATER/STREAM
- PROPERTY BOUNDARIES
- GROUND SURFACE CONTOURS
- TRENCH EXCAVATION

SCALE: 1"=80'

DRAWING IS HALF-SIZE IF PLOTTED 11x17

FINAL REVIEW
12/12/07

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

PARSONS

MUESER RUTLEDGE CONSULTING ENGINEERS

SITE PLAN AND LEGEND

Honeywell

C001

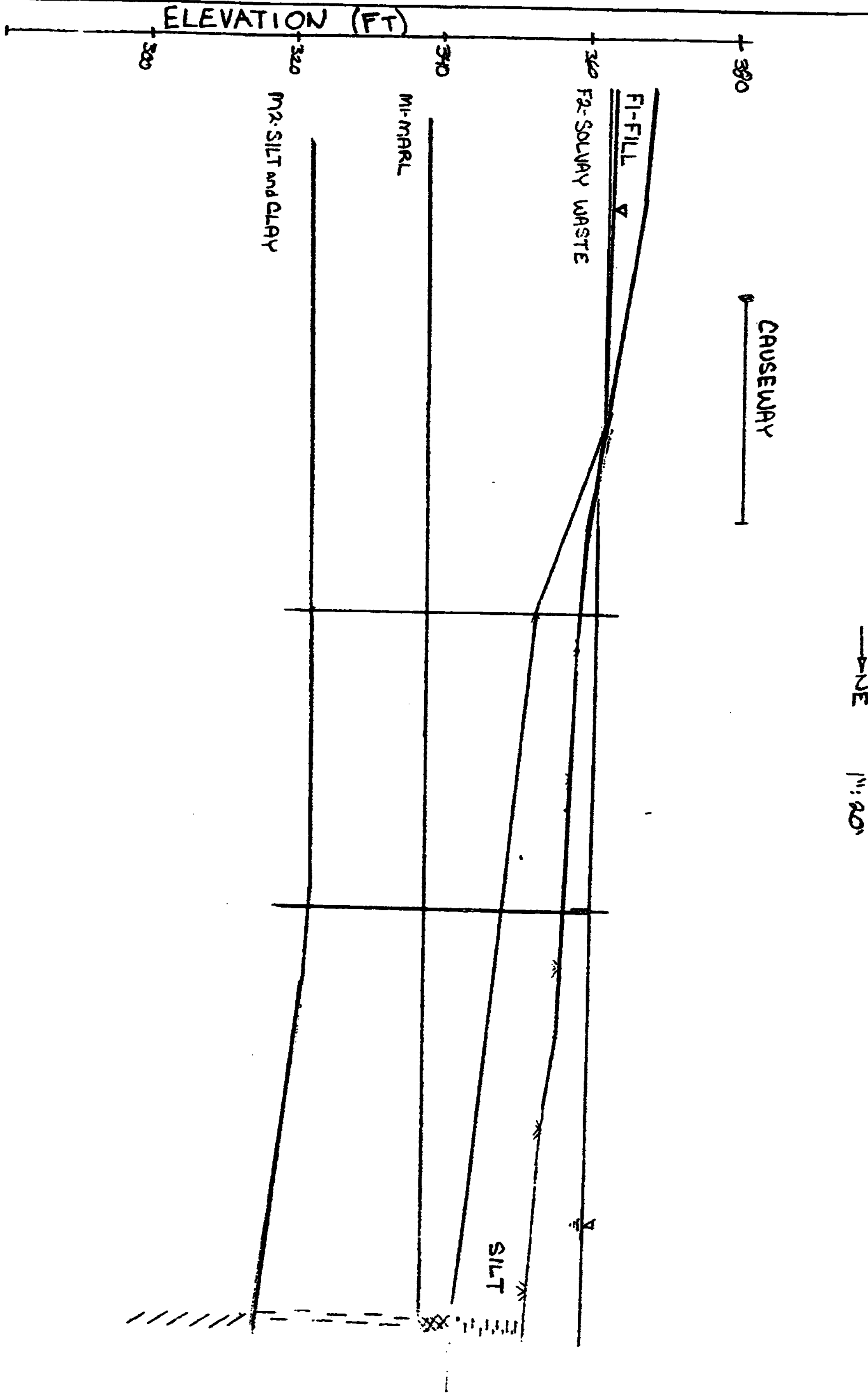
MUESER RUTLEDGE CONSULTING ENGINEERS

Sheet No. ____ Of ____
File 9801

For Willis/Semet

Made By JLR Date ____
Checked By ____ Date ____

SUBJECT SECTION 1-1

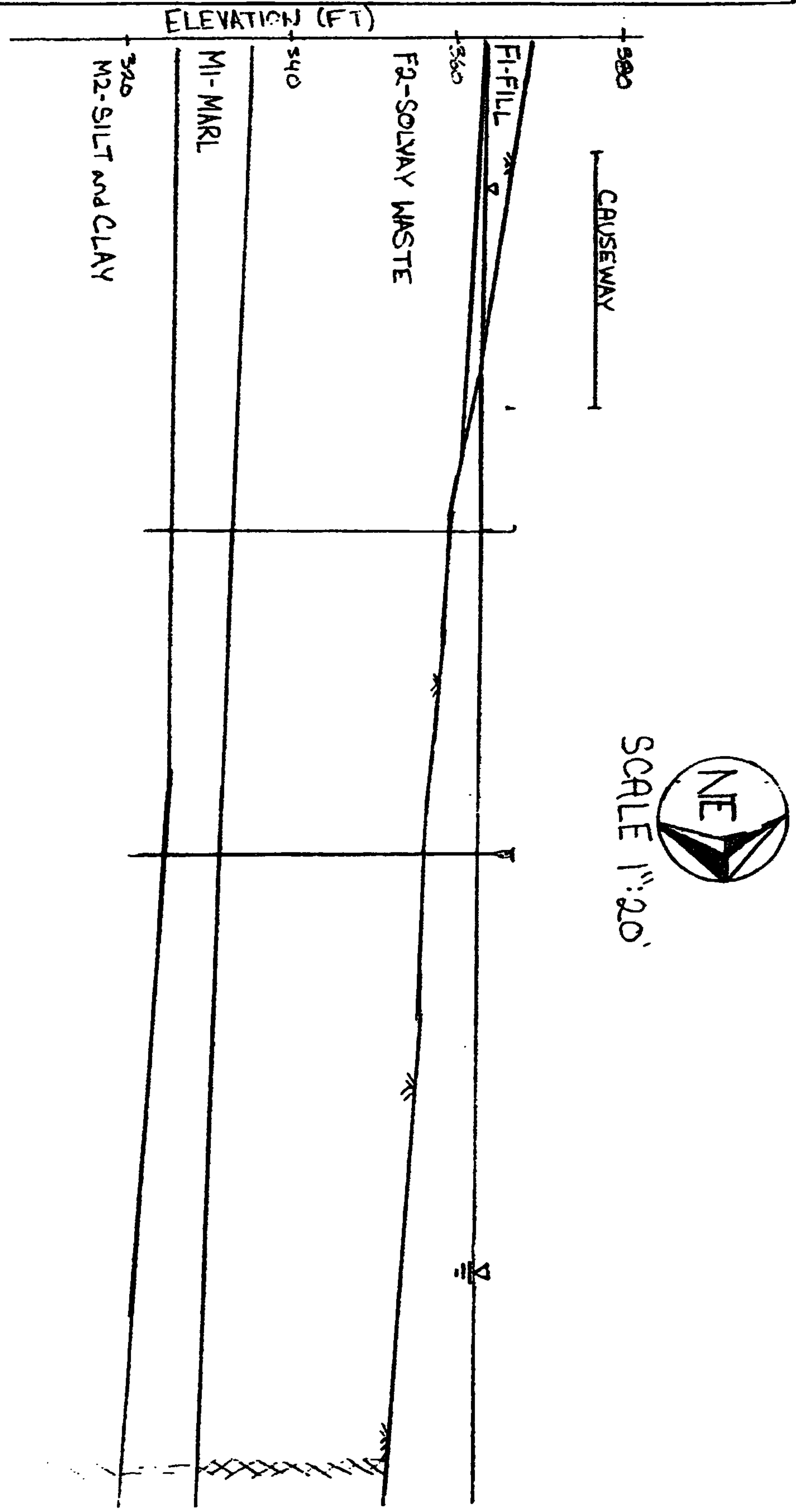


MUESER RUTLEDGE CONSULTING ENGINEERS

FOR Willis/Semet

SHEET No. OF
FILE 9801
MADE BY JLR DATE
CHECKED BY DATE

SUBJECT SECTION 2-2

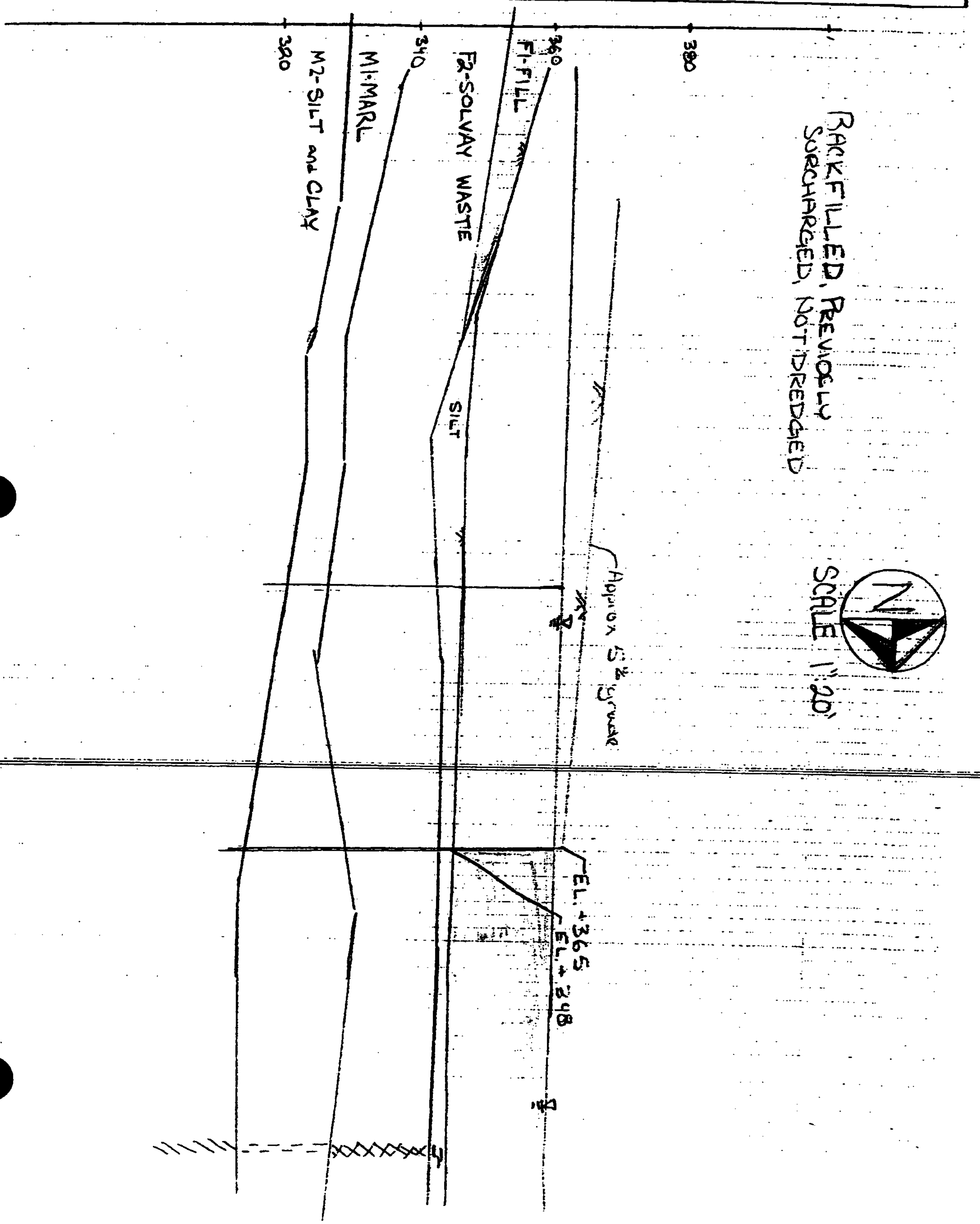


MUESER RUTLEDGE CONSULTING ENGINEERS

FOR Willis/Semet

Sheet No. ___ Of ___
File 9801
Made By JLR Date ___
Checked By ___ Date ___

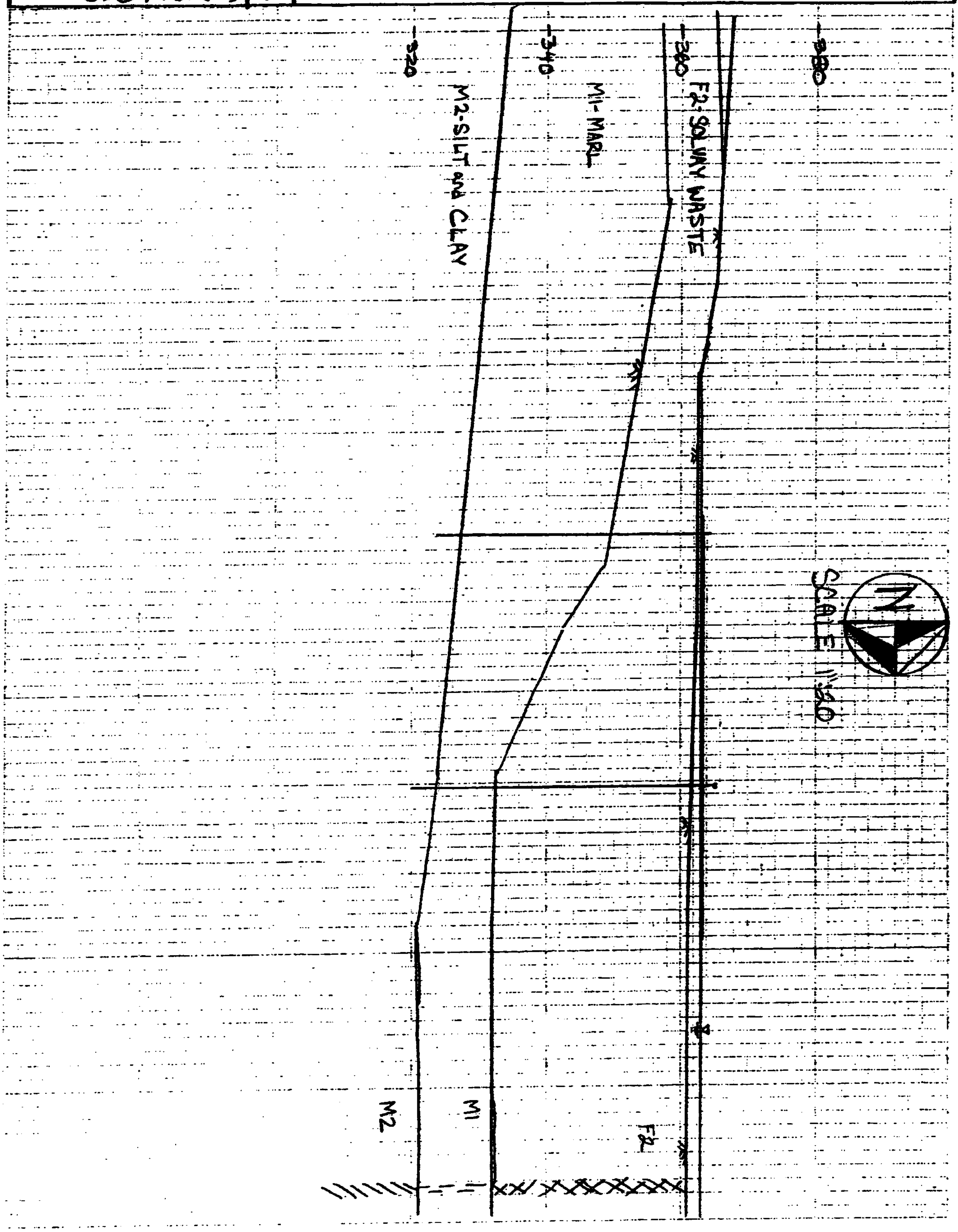
SUBJECT SECTION 3-3



MUESER RUTLEDGE CONSULTING ENGINEERS

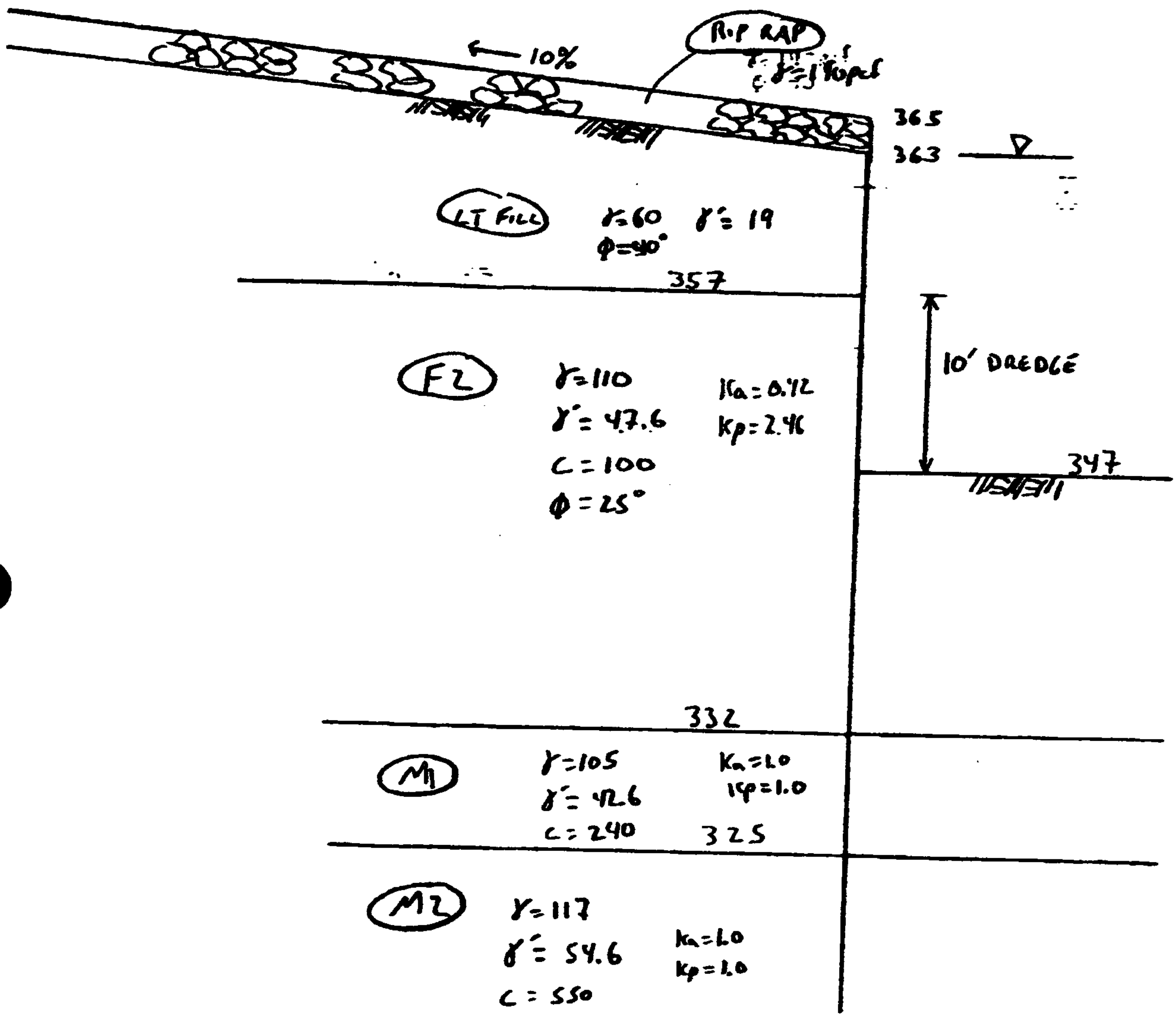
SHEET No. ____ OF ____
FILE 9801
MADE BY JLR DATE ____
FOR Willis/Semet
CHECKED BY ____ DATE ____

SUBJECT SECTION H-H



APPENDIX D

SUBJECT DESIGN SECTION 2



SURCHARGE FROM RIP RAP

$(140\ pcf)(2') = 280\ PSF$ AT $5.7°$

VERT COMPONENT $= (\cos 5.7)(280\ PSF) = 278.62\ PSF$

SURCHARGE FROM SLOPE

$(2.5')(60\,pcf) = 150\ PSF$

MUESER RUTLEDGE CONSULTING ENGINEERS

Sheet ______ of ______
File 9801

FOR ____________ Willis/Semet

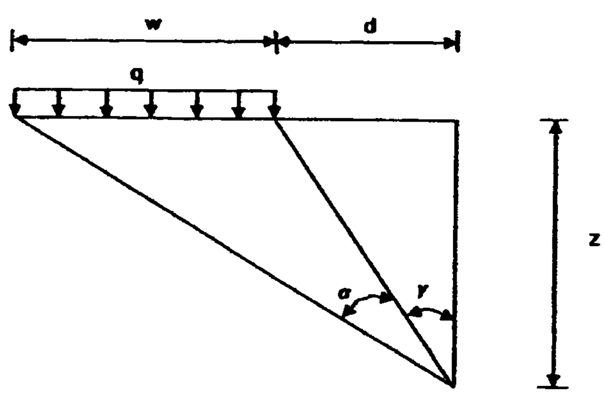
Made By GR Date 1/17/08
Checked By ________ Date ________

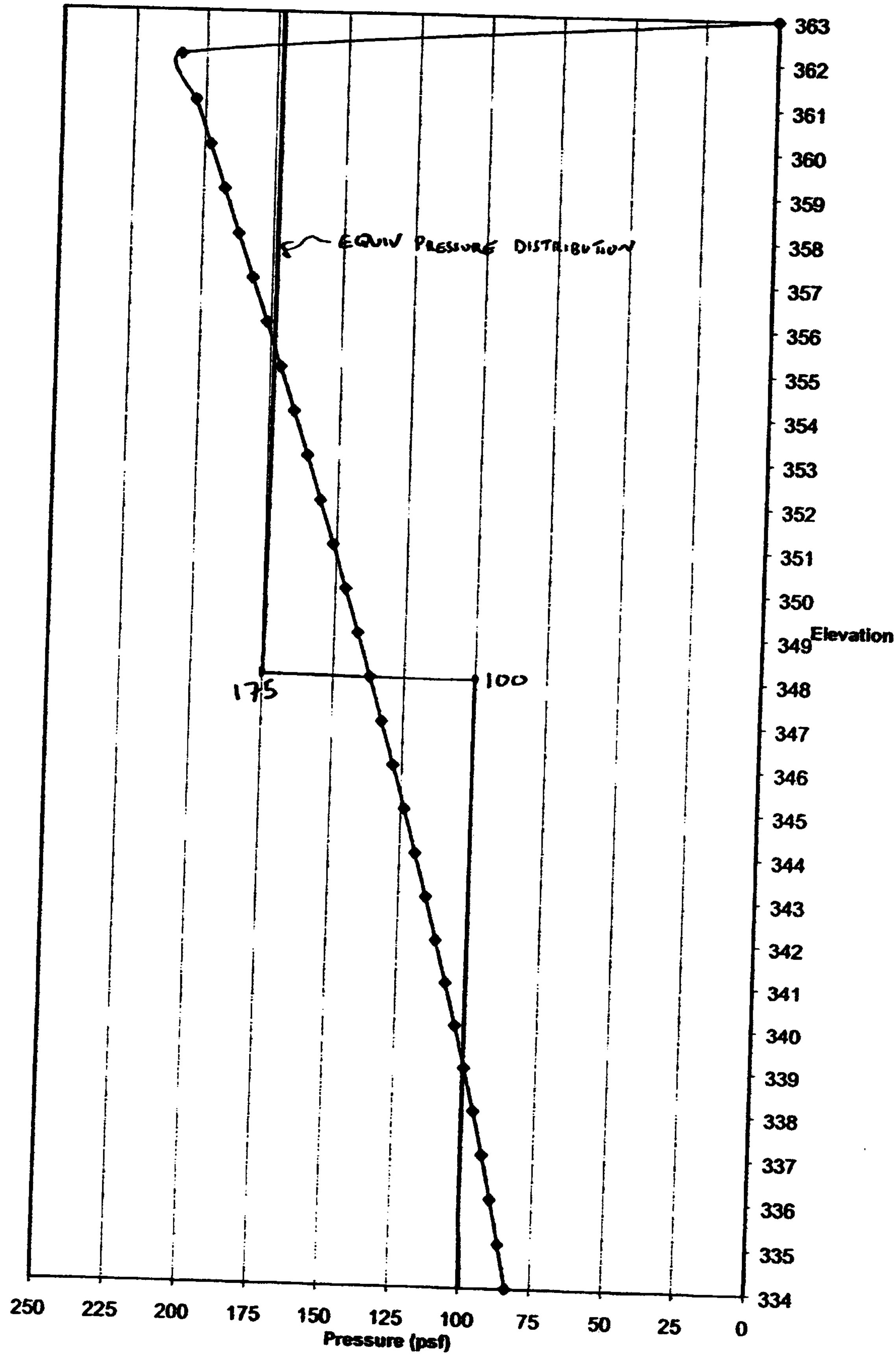
SUBJECT : **Surcharge**

Elastic Solution for Horizontal Pressure Caused by a Vertical Strip Load (Ref: Naval Design Manual 7.1)

Grade Elevation	363
Distance to Strip Load (d)	0 feet
Width Of Strip Load (w)	50 feet
Vertical Pressure of Strip Load (q)	428.62 psf

Elevation	z Depth (Feet)	γ Gamma (degrees)	α Alpha (degrees)	Horizontal Pressure (psf)
363	0	0.00	0.00	0
362	1	0.00	1.55	208.85
361	2	0.00	1.53	203.41
360	3	0.00	1.51	197.98
359	4	0.00	1.49	192.57
358	5	0.00	1.47	187.20
357	6	0.00	1.45	181.88
356	7	0.00	1.43	176.60
355	8	0.00	1.41	171.38
354	9	0.00	1.39	166.22
353	10	0.00	1.37	161.14
352	11	0.00	1.35	156.14
351	12	0.00	1.34	151.21
350	13	0.00	1.32	146.38
349	14	0.00	1.30	141.64
348	15	0.00	1.28	136.99
347	16	0.00	1.26	132.45
346	17	0.00	1.24	128.01
345	18	0.00	1.23	123.68
344	19	0.00	1.21	119.46
343	20	0.00	1.19	115.35
342	21	0.00	1.17	111.35
341	22	0.00	1.16	107.46
340	23	0.00	1.14	103.69
339	24	0.00	1.12	100.03
338	25	0.00	1.11	96.48
337	26	0.00	1.09	93.04
336	27	0.00	1.08	89.72
335	28	0.00	1.06	86.50
334	29	0.00	1.05	83.39




EQUIV PRESSURE DISTRIBUTION
175
100
363
362
361
360
359
358
357
356
355
354
353
352
351
350
349
348
347
346
345
344
343
342
341
340
339
338
337
336
335
334
Elevation
250
225
200
175
150
125
100
75
50
25
0
Pressure (psf)

MUESER RUTLEDGE CONSULTING ENGINEERS

Sheet No. ______ of ______

File ______

FOR ______ Willis/Semet

Made By ______ Date ______

Checked By ______ Date ______

SUBJECT : **Section 2**

Lateral Earth Pressures:

	DRIVING FORCES										RESISTING FORCES						
Layer	Elev. (ft.)	H (ft.)	g (pcf)	σ_v (psf)	k_a	c (psf)	R_a	Active Pressures (psf)	Surcharge Pressures (psf)	Net Water Pressures (psf)	H (ft.)	g (pcf)	σ_v (psf)	k_p	R_p	c (psf)	Passive Pressures (psf)
LT F	363	0	19	0	0.22	0	1.0	0	175	0							
	357	6	19	114	0.22	0	1.0	25	175	0							
F2	357	0	47.6	114	0.41	100	1.0	0	175	0							
	347	10	47.6	590	0.41	100	1.0	114	175	0							
	347	0	47.6	590	0.41	100	1.00	114	100	0	0	47.6	0	2.46	1	100	-314
	332	15	47.6	1304	0.41	100	1.00	407	100	0	15	47.6	714	2.46	1	100	-2070
M1	332	0	42.6	1304	1	240	1.00	824	0	0	0	42.6	714	1.00	1	240	-1194
	325	7	42.6	1602	1	240	1.00	1122	0	0	7	42.6	1012	1.00	1	240	-1492
M2	325	0	54.6	1602	1	550	1.00	502	0	0	0	54.6	1012	1.00	1	550	-2112
	300	25	54.6	2967	1	550	1.00	1867	0	0	25	54.6	2377	1.00	1	550	-3477

Net Pressures (psf)	Elev. (ft.)
175	363
200	357
175	357
289	347
-100	347
-1684	332
-370	332
-370	325
-1610	325
-1610	300

Active Pressures: $\sigma_a = \gamma \cdot H \cdot k_a - 2C \cdot \sqrt{k_a}$

Passive Pressures: $\sigma_p = \gamma \cdot H \cdot k_p + 2C \cdot \sqrt{k_p}$

MUESER RUTLEDGE CONSULTING ENGINEERS

Sheet No. ______ of ______

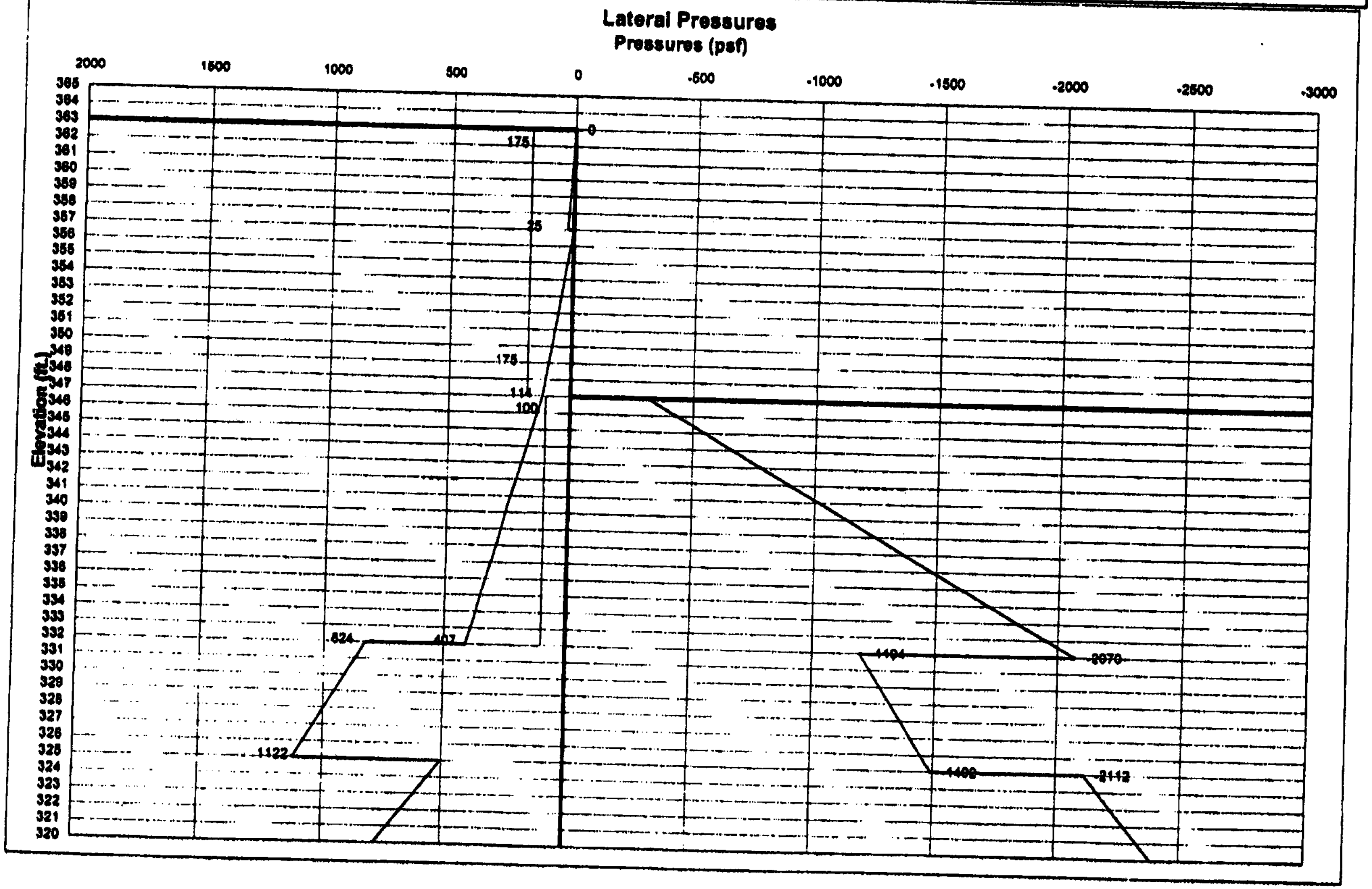
File ______

FOR ______ Willis/Semet

Made By ______ Date ______

SUBJECT: **Section 2**

Checked By ______ Date ______



MUESER RUTLEDGE CONSULTING ENGINEERS

Sheet No. ______ of ______

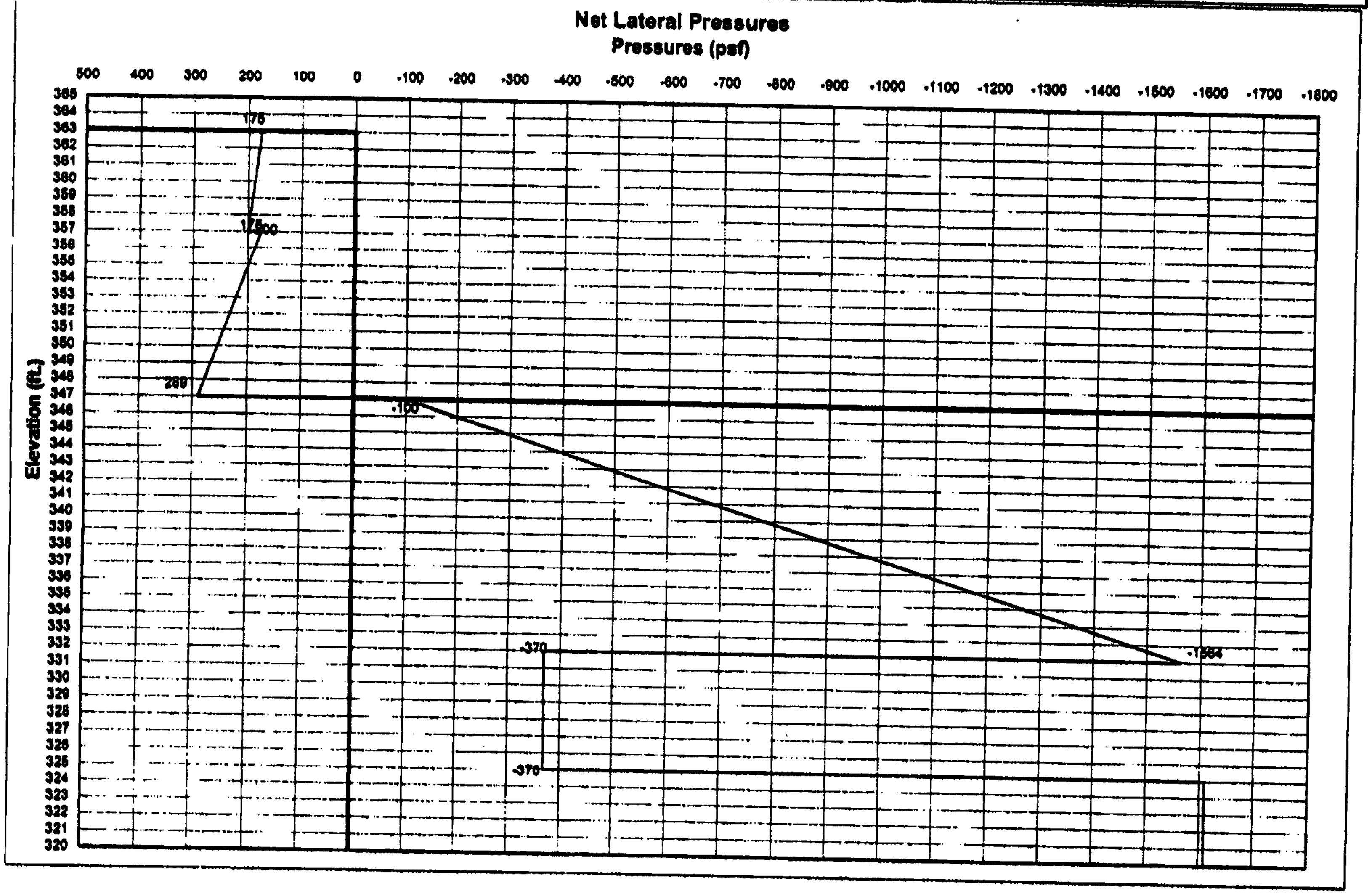
File ______

FOR ______ Willis/Semet

Made By ______ Date ______

Checked By ______ Date ______

SUBJECT : **Section 2**



MUESER RUTLEDGE CONSULTING ENGINEERS

Cantilever v3.0 BETA for Windows, 32-bit

Subject:

INPUT

P	Q	Interval Lengths
0.175	0.200	6.000
0.175	0.289	10.000
-0.100	-1.564	15.000

Passive pressure at subgrade : .37
Passive pressure slope : 0
Flexural rigidity : 37096 ← PZ 27

OUTPUT

At end of int. 1, Shear= 1.13, Moment= 3.30
At end of int. 2, Shear= 3.45, Moment= 25.20
At end of int. 3, Shear= -9.04, Moment= 10.73

D= 1.16 embedment below subgrade with F.S.= 1

Total Length of sheetpile is 32.16

Depth of max. moment= 23.44

Max. moment= 41.36

Depth of max. shear= 32.16
Max. shear= 9.46

USE F.S. = 1.4

1.4[1.16+15] ≈ 23'

T.P @ ELEV +324

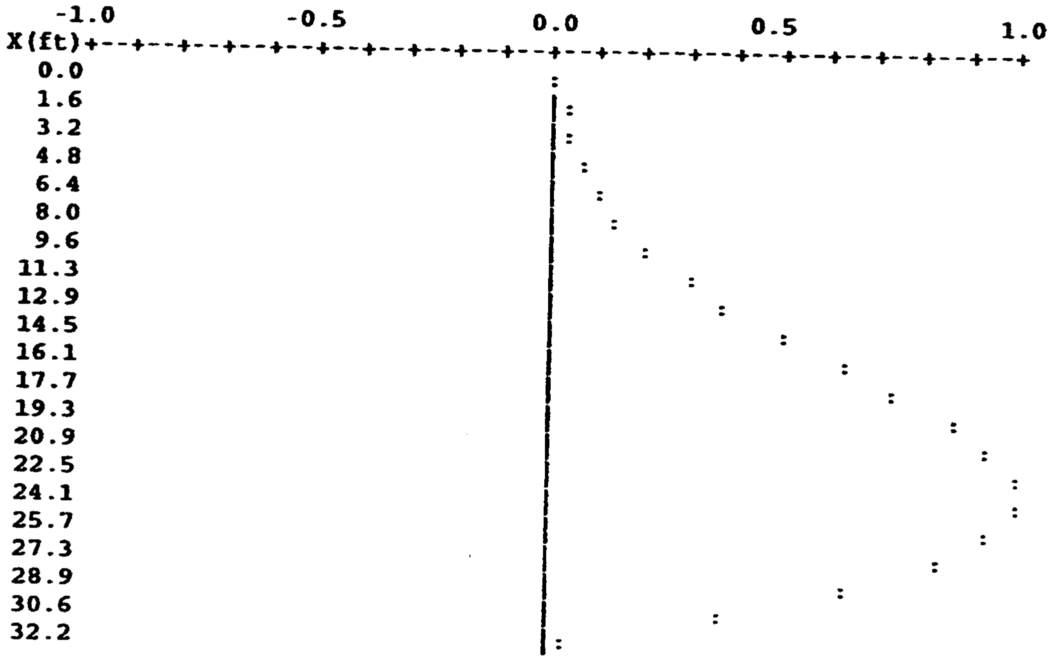
PZ 27 Sx = 30.2 in³

$f_b = \frac{(41.36)(12)}{30.2} = 16.43$ KSI

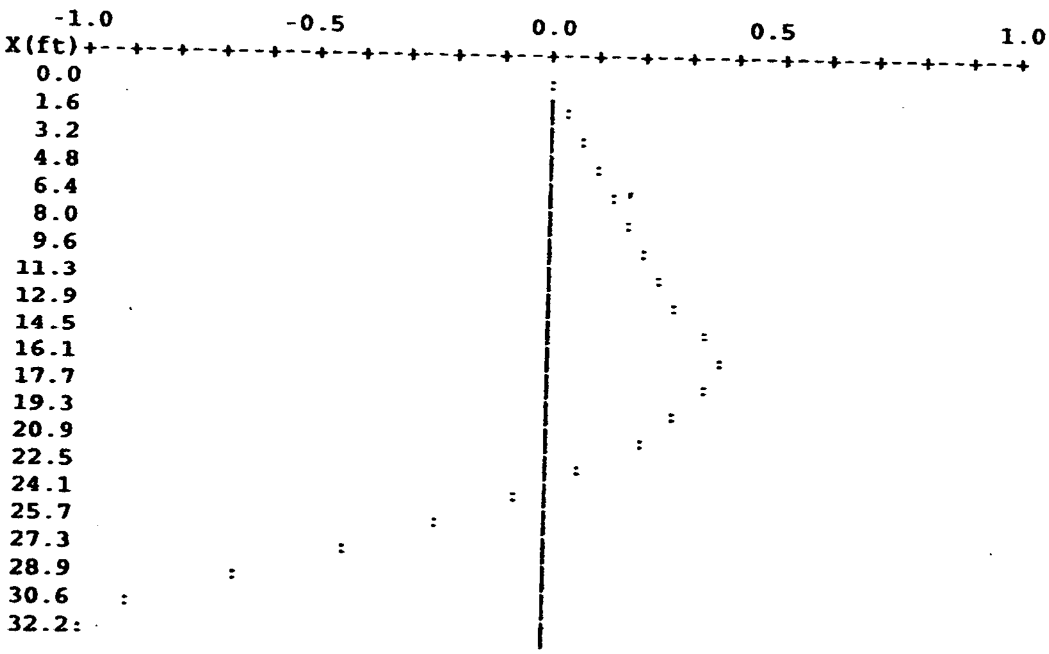
$F_b = 0.65(50 \text{ KSI}) = 32.5$ KSI

X	V	M	Defl.	
0.00	0.00	0.00	0.36	← 4.32"
1.61	0.29	0.23	0.33	
3.22	0.58	0.93	0.31	
4.82	0.89	2.11	0.28	
6.43	1.20	3.80	0.25	
8.04	1.51	5.97	0.22	
9.65	1.84	8.66	0.20	
11.26	2.20	11.90	0.17	
12.86	2.59	15.76	0.15	
14.47	3.02	20.26	0.12	
16.08	3.44	25.47	0.10	
17.69	3.14	30.79	0.08	
19.30	2.59	35.43	0.06	
20.90	1.78	38.97	0.04	
22.51	0.73	41.02	0.03	
24.12	-0.58	41.17	0.02	
25.73	-2.14	39.01	0.01	
27.33	-3.96	34.14	0.00	
28.94	-6.02	26.15	0.00	
30.55	-8.34	14.63	0.00	
32.16	-9.46	0.01	0.00	

Moment (M/Mmax)



Shear (V/Vmax)



MUESER RUTLEDGE CONSULTING ENGINEERS

SHEET No. OF

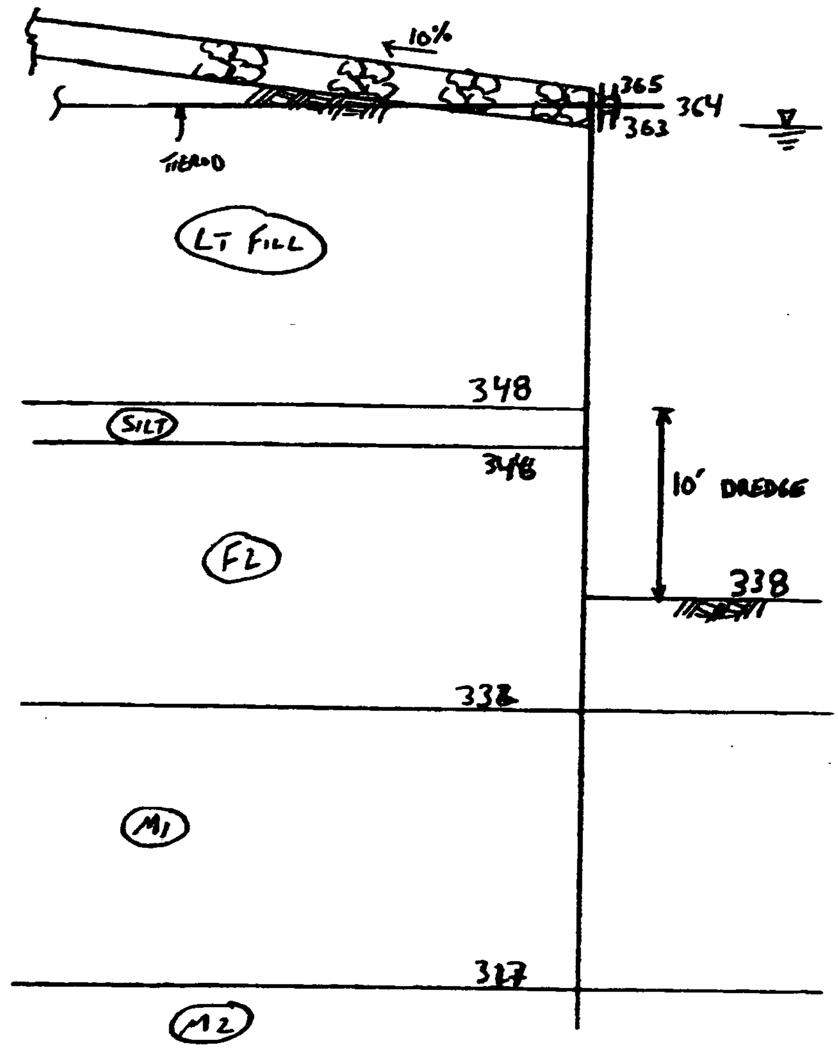
FILE

FOR

MADE BY GR DATE 1/8/07

CHECKED BY JR DATE 1/31/08

SUBJECT DESIGN SECTION 3



MUESER RUTLEDGE CONSULTING ENGINEERS

Sheet No. ______ of ______

FOR ________ Willis/Semet

File ______

Made By ______ Date ______

SUBJECT : **Section 3**

Checked By ______ Date ______

Lateral Earth Pressures:

	DRIVING FORCES										RESISTING FORCES						
Layer	Elev. (ft.)	H (ft.)	g (pcf)	σ_v (psf)	k_a	c (psf)	R_a	Active Pressures (psf)	Surcharge Pressures (psf)	Net Water Pressures (psf)	H (ft.)	g (pcf)	σ_v (psf)	k_p	R_p	c (psf)	Passive Pressures (psf)
LT F	363	0	19	0	0.22	0	1.0	0	175	0							
	348	15	19	285	0.22	0	1.0	63	175	0							
Silt	348	0	42.6	285	0.51	200	1.0	0	175	0							
	346	2	42.6	370	0.51	200	1.0	0	175	0							
F2	346	0	47.6	370	0.42	100	1.00	26	100	0							
	338	8	47.6	751	0.42	100	1.00	186	100	0							
	338	0	47.6	751	0.42	100	1.00	186	0	0	0	47.6	0	2.46	1	100	-314
	332	6	47.6	1037	0.42	100	1.00	306	0	0	6	47.6	286	2.46	1	100	-1016
M1	332	0	42.6	1037	1	240	1.00	557	0	0	0	42.6	286	1.00	1	240	-768
	317	15	42.6	1676	1	240	1.00	1196	0	0	15	42.6	925	1.00	1	240	-1405
M2	317	0	54.6	1676	1	550	1.00	576	0	0	0	54.6	925	1.00	1	550	-2025
	300	17	54.6	2604	1	550	1.00	1504	0	0	17	54.6	1853	1.00	1	550	-2953

Net Pressures (psf)	Elev. (ft.)
175	363
238	348
175	348
175	346
126	346
286	338
-128	338
-711	332
-209	332
-209	317
-1449	317
-1449	300

Active Pressures: $\sigma_a = \gamma \cdot H \cdot k_a - 2C \cdot \sqrt{k_a}$

Passive Pressures: $\sigma_p = \gamma \cdot H \cdot k_p + 2C \cdot \sqrt{k_p}$

MUESER RUTLEDGE CONSULTING ENGINEERS

Sheet No. ______ of ______

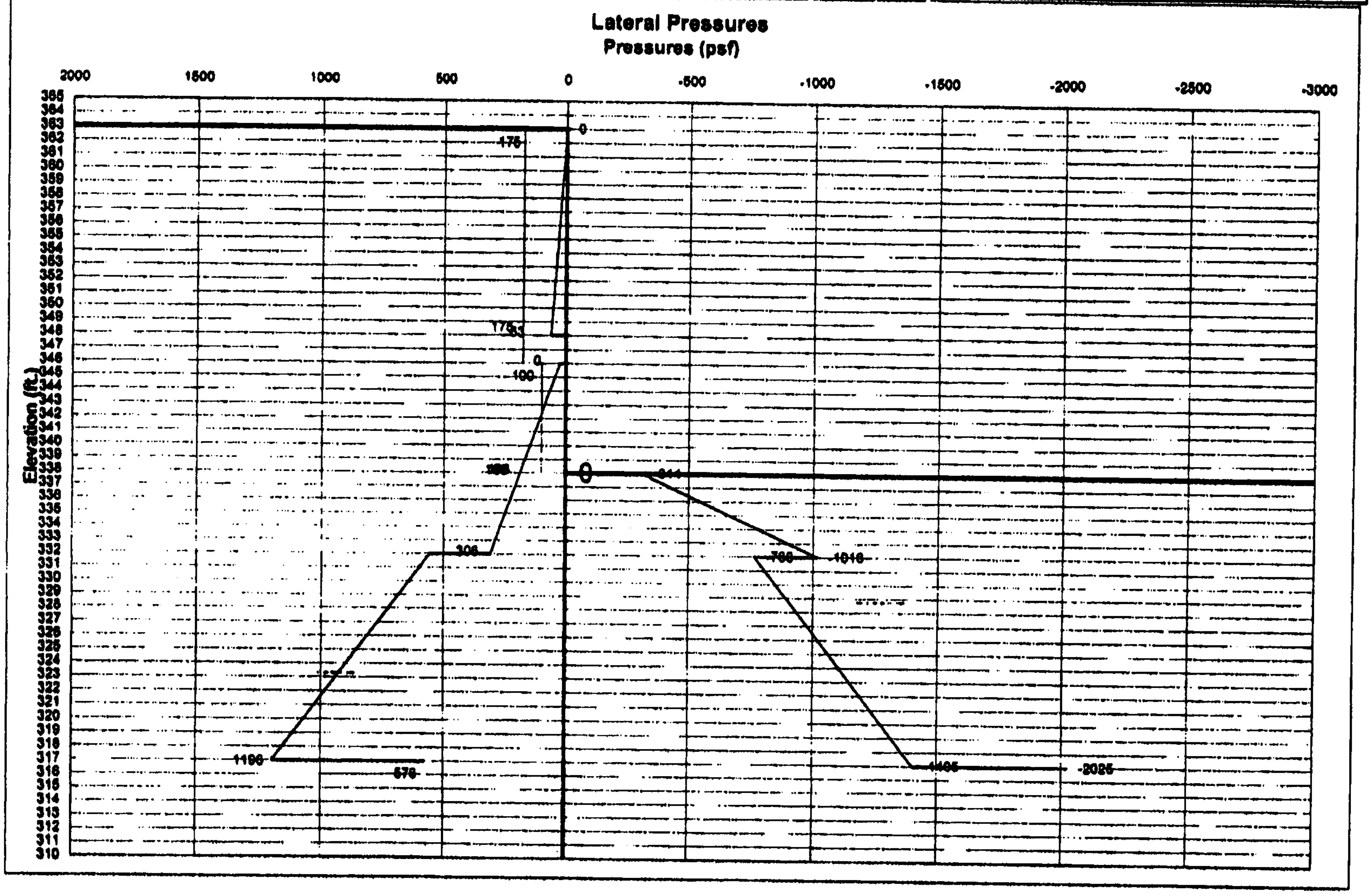
File ______

Made By ______ Date ______

Checked By ______ Date ______

FOR ______ Willis/Semet

SUBJECT : **Section 3**



MUESER RUTLEDGE CONSULTING ENGINEERS

Sheet No. ______ of ______

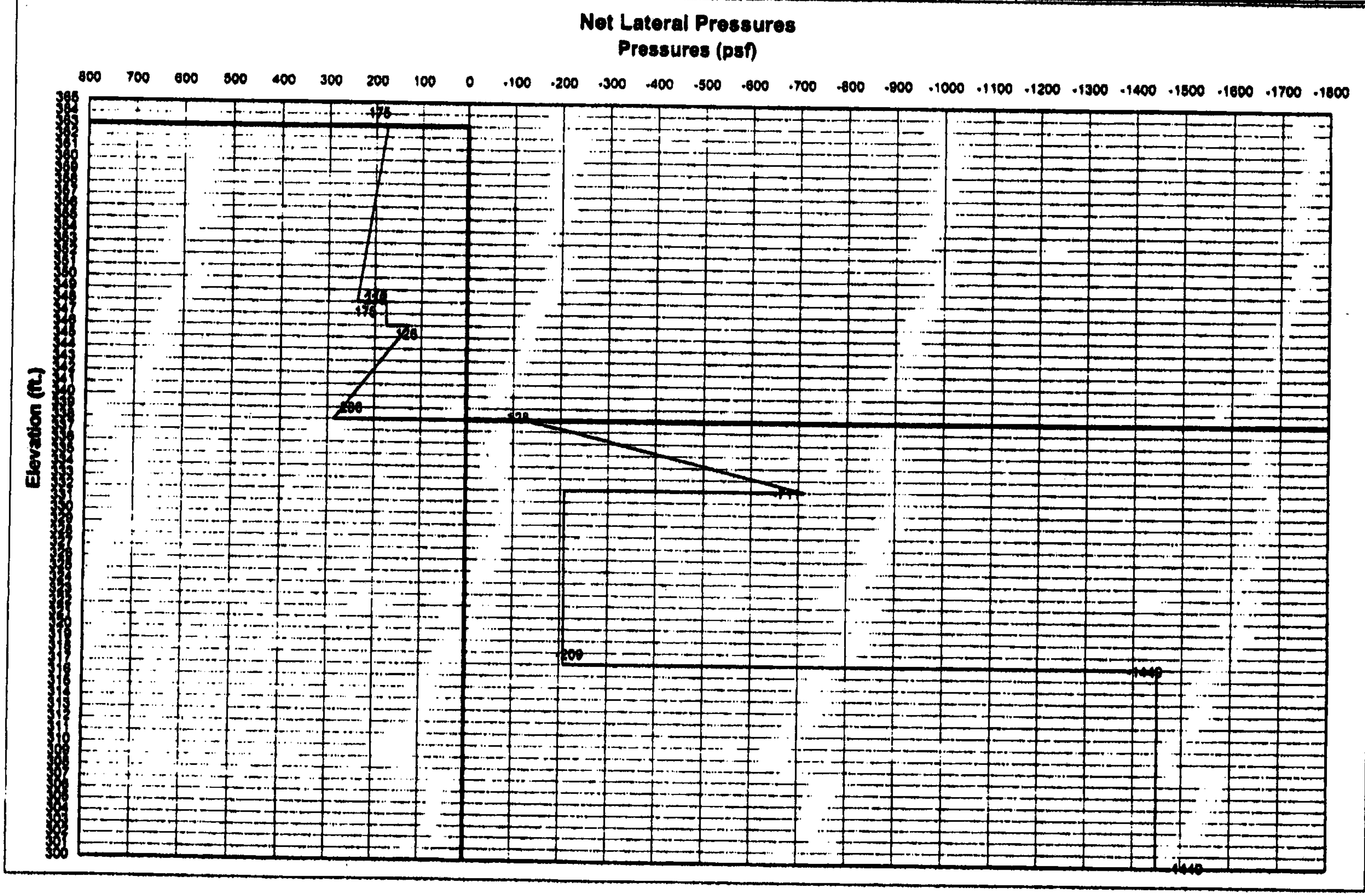
File ______

FOR ____________ Willis/Semet

Made By ________ Date ______

Checked By ________ Date ______

SUBJECT : **Section 3**



MUESER RUTLEDGE CONSULTING ENGINEERS

File No.: 9801

Made by: JR Date: 11/14/07

FOR Willis/Sennet

Checked by: Date:

SUBJECT: TABLE - 1 Soil Parameters PRIVELEGED AND CONFIDENTIAL

Layer	γ (pcf)	γ' (pcf)	c (psf)	φ(°)	ka	Kp	Ko
Fill	125.0	125.0	0	30	0.34	3.00	0.50
Fill wet	125.0	62.6	0	30	0.34	3.00	0.50
Silt	105.0	42.6	200	20	0.51	2.04	0.66
F2	110.0	47.6	100	25	0.42	2.46	0.58
M1	105.0	42.6	240	0	1.00	1.00	0.55
M2	117.0	54.6	550	0	1.00	1.00	0.48

For active pressures, assume β=3°

$$K_a = \frac{\cos(\beta) - \sqrt{\cos^2(\beta) - \cos^2(\phi)}}{\cos(\beta) + \sqrt{\cos^2(\beta) - \cos^2(\phi)}}$$ Rankine

$$K_p = \tan\left(45 + \frac{\phi}{2}\right)^2$$ Rankine

$$K_o = 1 - \sin(\phi)$$ Jaky

For M1 and M2, Assume normally consolidated and use average value of :

$$K_{o,nc} = 0.4 + 0.007\ (I_p)$$ (Brooker and Ireland, 1965)

$$K_{o,nc} = 0.19 + 0.233 * \log(I_p)$$ (Alpan, 1967)

$$K_{o,nc} = 0.44 + 0.0042 * I_p$$ (Holtz and Kovacs, 1981)

MUESER RUTLEDGE CONSULTING ENGINEERS
ANCHORED WALL ANALYSIS V2.1

lade By: GR Date: 01-17-2008 Checked By:

'OB #: 9801

'REE EARTH METHOD
'or an anchored wall with the following input:

p (ksf)	q (ksf)	interval (ft)
.175	.238	15
.175	.175	2
.126	.286	8

Pressure at slope (ksf): .128
Pressure slope (ksf/ft): .0972

Flexural rigidity of wall [EI] (k-ft^2): 72746 ← PZ 35

Distance from top of wall to anchor (ft): 0

Results from analysis:

d = 5.68 ft embedment below z = 25.00 ft
with FS=1.0

use F.S. = 1.2
D = 1.2 (5.68) = 7'

Total wall length = 30.68 ft

TIP @ EL +331

Anchor pull = 2.80 k/ft
Moment at anchor = 0.00 k-ft/ft
Shear at anchor = 2.80 k/ft

PZ 35 S_x = 48.5 in³/ft

Maximum positive moment = 20.10 k-ft/ft

$f_b = \frac{(20.1)(12)}{48.5 \text{ in}^3/\text{ft}} = 5$ ksi

Maximum moment = 20.10 k-ft/ft
Location of maximum moment = 13.73 ft below top of wall

F_b = (.65)(50 ksi) = 32.5 ksi
OK

Maximum shear = 2.80 k/ft

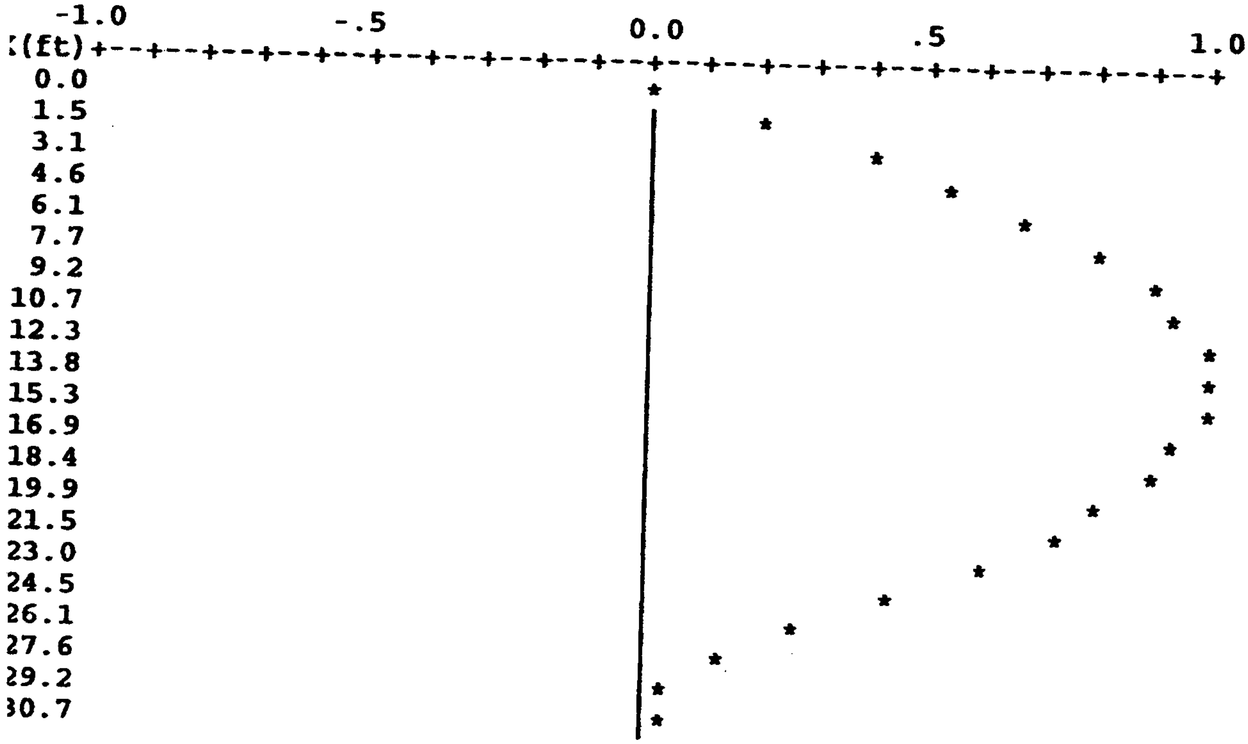
Maximum load = -0.68 ksf/ft
Maximum deflection = -0.31 in at 13.81 ft below top of wall

X (ft)	P (ksf/ft)	V (k/ft)	M (k-ft/ft)	DEF (in)
0.00	0.17	0.00	0.00	0.00
1.53	0.18	-2.52	4.08	-0.05
3.07	0.19	-2.24	7.74	-0.10
4.60	0.19	-1.95	10.95	-0.15
6.14	0.20	-1.64	13.71	-0.19
7.67	0.21	-1.33	15.99	-0.23
9.21	0.21	-1.01	17.79	-0.26
10.74	0.22	-0.68	19.08	-0.28
12.27	0.23	-0.33	19.86	-0.30
13.81	0.23	0.02	20.10	-0.31
15.34	0.17	0.36	19.80	-0.31
16.88	0.17	0.63	19.04	-0.31
18.41	0.15	0.85	17.91	-0.29
19.94	0.18	1.11	16.42	-0.27
21.48	0.22	1.41	14.49	-0.24
23.01	0.25	1.77	12.05	-0.21
24.55	0.28	2.17	9.03	-0.17
26.08	-0.23	2.10	5.63	-0.13
27.62	-0.38	1.63	2.74	-0.09
29.15	-0.53	0.93	0.75	-0.04
30.68	-0.68	0.00	0.00	0.00

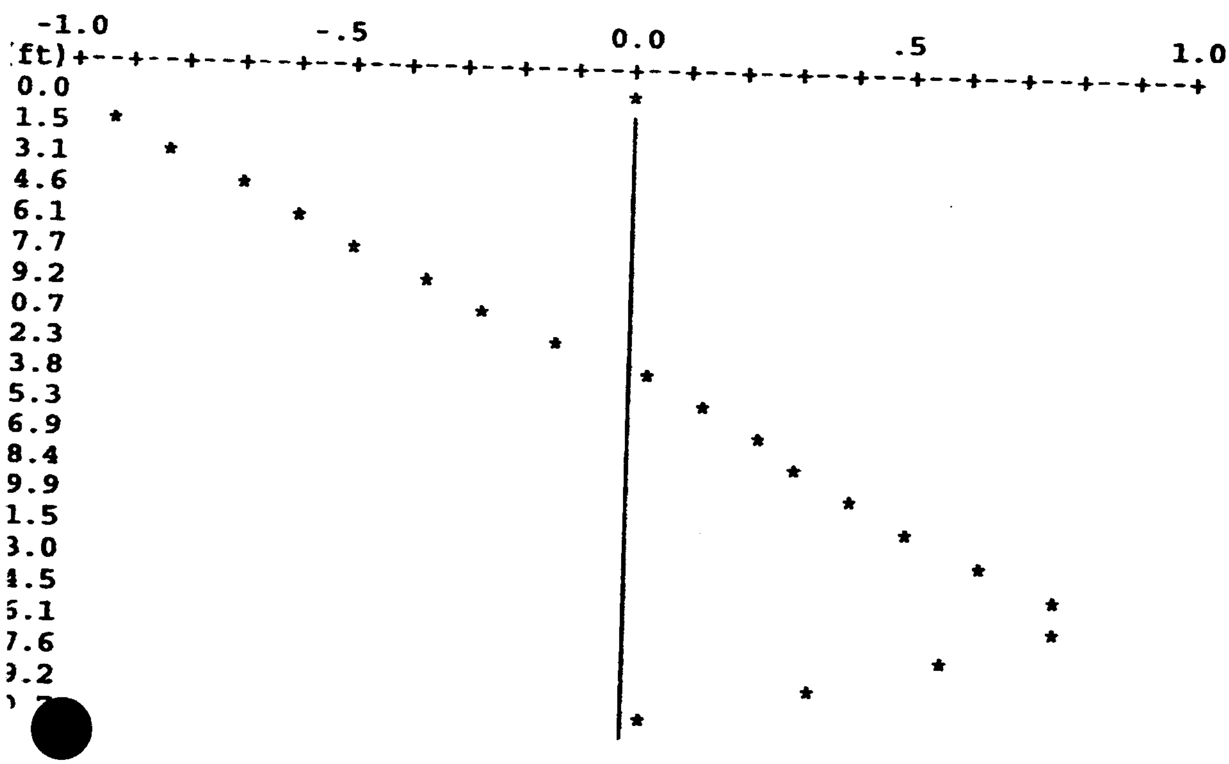
Pressure (P/Pmax)

```
   1.0             .5            0.0            -.5           -1.0
(ft)+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
 0.0                      *       |
 1.5                      *       |
 3.1                     *        |
 4.6                     *        |
 6.1                     *        |
 7.7                    *         |
 9.2                    *         |
10.7                    *         |
12.3                    *         |
13.8                   *          |
15.3                      *       |
16.9                      *       |
18.4                       *      |
19.9                     *        |
21.5                    *         |
23.0                   *          |
24.5                 *            |
26.1                              |         *
27.6                              |                *
29.2                              |                      *
   7                              |                             *
```

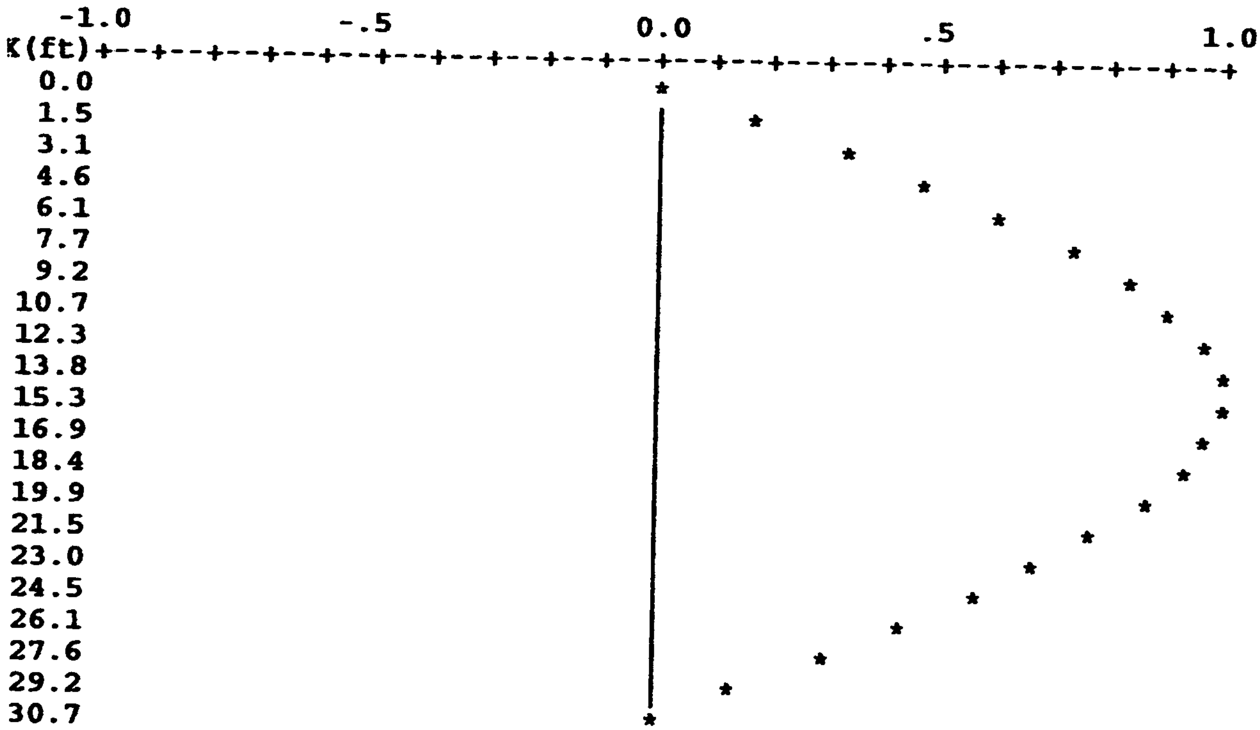
Moment (M/Mmax)



Shear (V/Vmax)



Deflection (DELTA/DELTAmax)



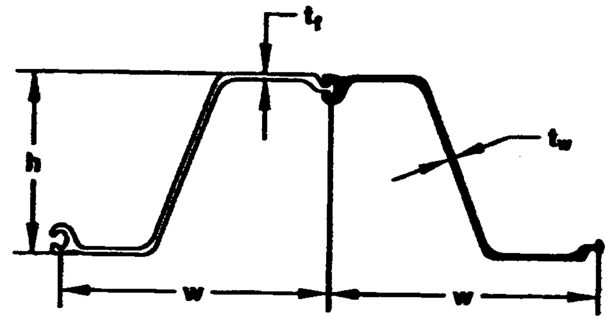
skylinesteel

Technical Hotline: 1-866-8SKYLINE
engineering@skylinesteel.com
www.skylinesteel.com

10/07

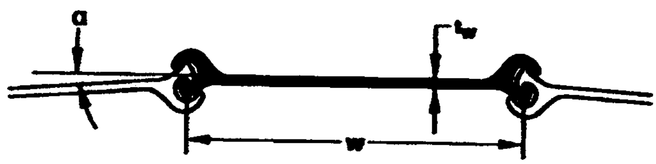
PZ/PS

PZ/PS Hot Rolled Steel Sheet Piling



PZ

SECTION	Width (w) in (mm)	Height (h) in (mm)	THICKNESS Flange (t_f) in (mm)	THICKNESS Wall (t_w) in (mm)	Area in²/ft (cm²/m)	WEIGHT Pile lb/ft (kg/m)	WEIGHT Wall lb/ft² (kg/m²)	Section Modulus in³/ft (cm³/m)	Moment of Inertia in⁴/ft (cm⁴/m)	COATING AREA Both Sides ft²/ft of single (m²/m)	COATING AREA Wall Surface ft²/ft² of wall (m²/m²)
PZ 22	22.0 *559*	9.0 *229*	0.375 *9.50*	0.375 *9.50*	6.47 *136.9*	40.3 *60.0*	22.0 *107.4*	18.1 *973*	84.38 *11500*	4.48 *1.37*	1.22 *1.22*
PZ 27	18.0 *457*	12.0 *305*	0.375 *9.50*	0.375 *9.50*	7.94 *168.1*	40.5 *60.3*	27.0 *131.8*	30.2 *1620*	184.20 *25200*	4.48 *1.37*	1.49 *1.49*
PZ 35	22.6 *575*	14.9 *378*	0.600 *15.21*	0.500 *12.67*	10.29 *217.8*	66.0 *98.2*	35.0 *170.9*	48.5 *2608*	361.22 *49300*	5.37 *1.64*	1.42 *1.42*
PZ 40	19.7 *500*	16.1 *409*	0.600 *15.21*	0.500 *12.67*	11.77 *249.1*	65.6 *97.6*	40.0 *195.3*	60.7 *3263*	490.85 *67000*	5.37 *1.64*	1.64 *1.64*



PS

SECTION	Width (w) in (mm)	Web (t_w) in (mm)	Maximum Interlock Strength k/in (kN/m)	Minimum Cell Diameter* Degrees (Degrees)	Area in²/ft (cm²/m)	WEIGHT Pile lb/ft (kg/m)	WEIGHT Wall lb/ft² (kg/m²)	Section Modulus in³/sheet (cm³/sheet)	Moment of Inertia in⁴/sheet (cm⁴/sheet)	COATING AREA Both Sides ft²/ft of single (m²/m)	COATING AREA Wall Surface ft²/ft² of wall (m²/m²)
PS 27.5	19.69 *500*	0.4 *10.2*	24 *2400*	30 *9.14*	8.09 *171.2*	45.1 *67.1*	27.5 *134.3*	3.3 *54*	5.3 *221*	3.65 *1.11*	1.11 *1.11*
PS 31	19.69 *500*	0.5 *12.7*	24 *2400*	30 *9.14*	9.12 *193.0*	50.9 *75.7*	31.0 *151.4*	3.3 *54*	5.3 *221*	3.65 *1.11*	1.11 *1.11*

- Minimum cell diameter cannot be guaranteed for piles over 65 feet *(19.81 m)* in length
- Minimum cell diameter cannot be guaranteed if piles are spliced
- 58 Piles are needed to make a 30 foot diameter cell

skylinesteel

PZ/PS

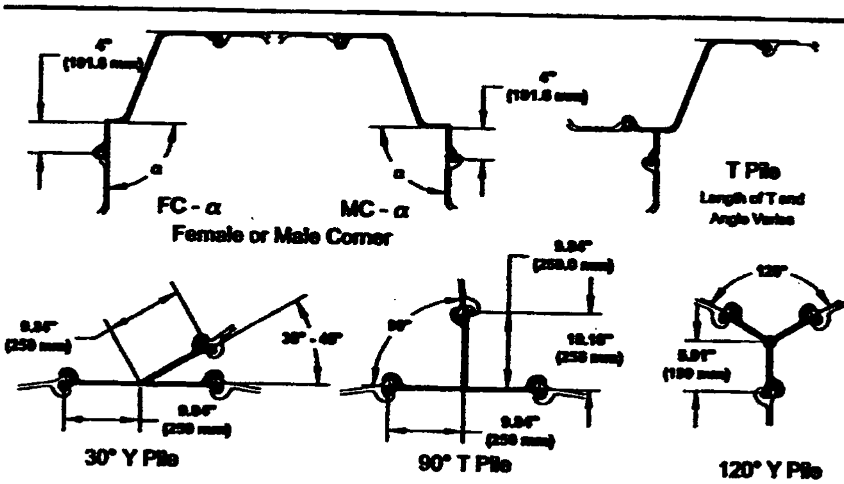
Technical Hotline: 1-866-8SKYLINE
engineering@skylinesteel.com
www.skylinesteel.com

PZ/PS Hot Rolled Steel Sheet Piling

Available Steel Grades

PZ's			PS's				
ASTM	YIELD STRENGTH		ASTM	YIELD STRENGTH		INTERLOCK STRENGTH	
	(ksi)	(MPa)		(ksi)	(MPa)	(k/in)	(kN/m)
A 328	39	270	A 328	39	270	16	2800
A 572 Grade 50	50	345	A 572 Grade 50	50	345	20	3500
A 572 Grade 60	60	415	A 572 Grade 60	60	415	24	4200
A 572 Grade 65	65	450	A 572 Grade 65	65	450	24	4200
A 588	50	345	A 588	50	345	20	3500
A 690	50	345	A 690	50	345	20	3500

Corner and Junction Piles



Delivery Conditions & Tolerances

	ASTM A 6	
Mass	± 2.5%	
Length	+ 5 inches	− 0 inches

Maximum Rolled Lengths*

PZ	85 feet for singles, 70 feet for pairs	*(25.9 m, 21.3 m)*
PS	65 feet	*(19.8 m)*

**Longer lengths may be possible upon request.*

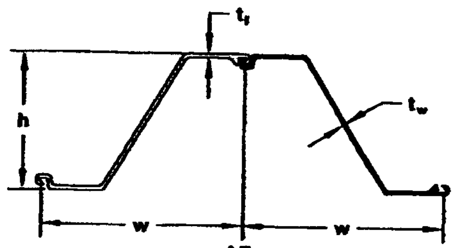
skylinesteel

AZ

Technical Hotline: 1-866-8SKYLINE
engineering@skylinesteel.com
www.skylinesteel.com

01/08

AZ Hot Rolled Steel Sheet Piling



AZ

SECTION	Width (w) in *(mm)*	Height (h) in *(mm)*	THICKNESS Flange (t_f) in *(mm)*	Web (t_w) in *(mm)*	Cross Sectional Area in²/ft *(cm²/m)*	WEIGHT Pile lb/ft *(kg/m)*	Wall lb/ft² *(kg/m²)*	Section Modulus in³/ft *(cm³/m)*	Moment of Inertia in⁴/ft *(cm⁴/m)*	COATING AREA Both Sides ft²/ft of single *(m²/m)*	Wall Surface ft²/ft² *(m²/m²)*
AZ 12	26.38 *670*	11.89 *302.0*	0.335 *8.50*	0.335 *8.50*	5.94 *125.7*	44.42 *66.10*	20.22 *98.70*	22.3 *1200*	132.8 *18140*	5.45 *1.66*	1.23 *1.23*
AZ 13	26.38 *670*	11.93 *303.0*	0.375 *9.50*	0.375 *9.50*	6.47 *136.9*	48.38 *72.00*	22.02 *107.50*	24.2 *1300*	144.3 *19700*	5.45 *1.66*	1.23 *1.23*
AZ 14	26.38 *670*	11.97 *304.0*	0.413 *10.50*	0.413 *10.50*	7.03 *148.9*	52.62 *78.30*	23.94 *116.90*	26.0 *1400*	156.0 *21300*	5.45 *1.66*	1.23 *1.23*
AZ 12-770	30.31 *770*	13.52 *343.5*	0.335 *8.50*	0.335 *8.50*	5.67 *120.1*	48.78 *72.60*	19.31 *94.30*	23.2 *1245*	156.9 *21430*	6.10 *1.86*	1.20 *1.20*
AZ 13-770	30.31 *770*	13.54 *344.0*	0.354 *9.00*	0.354 *9.00*	5.94 *125.8*	51.14 *76.10*	20.24 *98.80*	24.2 *1300*	163.7 *22360*	6.10 *1.86*	1.20 *1.20*
AZ 14-770	30.31 *770*	13.56 *344.5*	0.375 *9.50*	0.375 *9.50*	6.21 *131.5*	53.42 *79.50*	21.14 *103.20*	25.2 *1355*	170.6 *23300*	6.10 *1.86*	1.20 *1.20*
AZ 17	24.80 *630*	14.92 *379.0*	0.335 *8.50*	0.335 *8.50*	6.53 *138.3*	45.96 *68.40*	22.24 *108.60*	31.0 *1665*	231.3 *31580*	5.64 *1.72*	1.35 *1.35*
AZ 18	24.80 *630*	14.96 *380.0*	0.375 *9.50*	0.375 *9.50*	7.11 *150.4*	49.99 *74.40*	24.19 *118.10*	33.5 *1800*	250.4 *34200*	5.64 *1.72*	1.35 *1.35*
AZ 19	24.80 *630*	15.00 *381.0*	0.413 *10.50*	0.413 *10.50*	7.74 *163.8*	54.43 *81.00*	26.34 *128.60*	36.1 *1940*	270.8 *36960*	5.64 *1.72*	1.35 *1.35*
AZ 17-700	27.56 *700*	16.52 *419.5*	0.335 *8.50*	0.335 *8.50*	6.28 *133.0*	49.12 *73.10*	21.38 *104.40*	32.2 *1730*	265.3 *36230*	6.10 *1.86*	1.33 *1.33*
AZ 18-700	27.56 *700*	16.54 *420.0*	0.354 *9.00*	0.354 *9.00*	6.58 *139.2*	51.41 *76.50*	22.39 *109.30*	33.5 *1800*	276.8 *37800*	6.10 *1.86*	1.33 *1.33*
AZ 19-700	27.56 *700*	16.56 *420.5*	0.375 *9.50*	0.375 *9.50*	6.88 *145.6*	53.76 *80.00*	23.41 *114.30*	34.8 *1870*	288.4 *39380*	6.10 *1.86*	1.33 *1.33*
AZ 20-700	27.56 *700*	16.57 *421.0*	0.394 *10.00*	0.394 *10.00*	7.18 *152.0*	56.11 *83.50*	24.43 *119.30*	36.2 *1945*	300.0 *40960*	6.10 *1.86*	1.33 *1.33*
AZ 25	24.80 *630*	16.77 *426.0*	0.472 *12.00*	0.441 *11.20*	8.74 *185.0*	61.48 *91.50*	29.74 *145.20*	45.7 *2455*	382.6 *52250*	5.91 *1.80*	1.41 *1.41*
AZ 26	24.80 *630*	16.81 *427.0*	0.512 *13.00*	0.480 *12.20*	9.35 *198.0*	65.72 *97.80*	31.79 *155.20*	48.4 *2600*	406.5 *55510*	5.91 *1.80*	1.41 *1.41*
AZ 28	24.80 *630*	16.85 *428.0*	0.551 *14.00*	0.520 *13.20*	9.97 *211.1*	70.15 *104.40*	33.94 *165.70*	51.2 *2755*	431.8 *58940*	5.91 *1.80*	1.41 *1.41*
AZ 37-700	27.56 *700*	19.65 *499.0*	0.669 *17.00*	0.480 *12.20*	10.68 *226*	83.46 *124.20*	36.33 *177.40*	68.9 *3705*	676.6 *92400*	6.76 *2.06*	1.46 *1.46*
AZ 39-700	27.56 *700*	19.69 *500.0*	0.709 *18.00*	0.520 *13.20*	11.34 *240*	88.63 *131.90*	38.59 *188.40*	72.5 *3900*	714.0 *97500*	6.76 *2.06*	1.46 *1.46*
AZ 41-700	27.56 *700*	19.72 *501.0*	0.748 *19.00*	0.559 *14.20*	12.00 *254*	93.74 *139.50*	40.84 *199.40*	76.2 *4095*	751.4 *102610*	6.76 *2.06*	1.46 *1.46*
AZ 46	22.83 *580*	18.94 *481.0*	0.709 *18.00*	0.551 *14.00*	13.76 *291.2*	89.10 *132.60*	46.82 *228.60*	85.5 *4595*	808.8 *110450*	6.23 *1.90*	1.63 *1.63*
AZ 48	22.83 *580*	18.98 *482.0*	0.748 *19.00*	0.591 *15.00*	14.48 *306.5*	93.81 *139.60*	49.28 *240.60*	89.3 *4800*	847.1 *115670*	6.23 *1.90*	1.63 *1.63*
AZ 50	22.83 *580*	19.02 *483.0*	0.787 *20.00*	0.630 *16.00*	15.22 *322.2*	98.58 *146.70*	51.80 *252.9*	93.3 *5015*	886.5 *121060*	6.23 *1.90*	1.63 *1.63*

MUESER RUTLEDGE CONSULTING ENGINEERS

File No.: 9801

Made by: JR   Date: 1/28/08

FOR Willis Semet Bulkhead Design   Checked by: ____   Date: ____

SUBJECT: Settlement - Design Section 1 - Fill from +359 to +372

Footing Shape ____ (CIR, CONT, SQ, RECT)
Diameter or Length ____ ft   Depth increment 2 ft
Width ____ ft   Water @ 0 feet below GS
Embedment ____
Foundation Load 620.0 psf

Limiting Depth   **TOTAL SETTLEMENT 28.6 in**

Top of Layer (ft)	Bottom of Layer (ft)	C_C	Cr	γ (pcf)	e_0	OCR	C_v
0	20	0.94	0.019	105	5.13	1	200
20	36	0.37	0.0135	110	1.73	1	400
36	76	0.25	0.0132	116	0.99	1	0
76	56	0.00001	0.00001	120	0.3	1	0

Depth (ft)	Δσz psf	γ' psf	σ'_{midpt} psf	Cc	Cr	OCR	e	δ layer in	δ Total in
0		42.6	0						
2	620.0	42.6	42.6	0.94	0.019	1	5.13	4.386289	4.4
4	620.0	42.6	127.8	0.94	0.019	1	5.13	2.8236972	7.2
6	620.0	42.6	213	0.94	0.019	1	5.13	2.1796913	9.4
8	620.0	42.6	298.2	0.94	0.019	1	5.13	1.7975486	11.2
10	620.0	42.6	383.4	0.94	0.019	1	5.13	1.537694	12.7
12	620.0	42.6	468.6	0.94	0.019	1	5.13	1.3472186	14.1
14	620.0	42.6	553.8	0.94	0.019	1	5.13	1.2006526	15.3
16	620.0	42.6	639	0.94	0.019	1	5.13	1.0839284	16.4
18	620.0	42.6	724.2	0.94	0.019	1	5.13	0.9885379	17.3
20	620.0	47.6	814.4	0.94	0.019	1	5.13	0.9047278	18.2
22	620.0	47.6	909.6	0.37	0.0135	1	1.73	0.7342343	19.0
24	620.0	47.6	1004.8	0.37	0.0135	1	1.73	0.6789143	19.7
26	620.0	47.6	1100	0.37	0.0135	1	1.73	0.6314746	20.3
28	620.0	47.6	1195.2	0.37	0.0135	1	1.73	0.5903213	20.9
30	620.0	47.6	1290.4	0.37	0.0135	1	1.73	0.554268	21.4
32	620.0	47.6	1385.6	0.37	0.0135	1	1.73	0.5224122	22.0
34	620.0	47.6	1480.8	0.37	0.0135	1	1.73	0.4940543	22.5
36	620.0	53.6	1582	0.37	0.0135	1	1.73	0.4671298	22.9
38	620.0	53.6	1689.2	0.25	0.0132	1	0.99	0.4093884	23.3
40	620.0	53.6	1796.4	0.25	0.0132	1	0.99	0.3882385	23.7
42	620.0	53.6	1903.6	0.25	0.0132	1	0.99	0.3691804	24.1
44	620.0	53.6	2010.8	0.25	0.0132	1	0.99	0.3519165	24.4
46	620.0	53.6	2118	0.25	0.0132	1	0.99	0.3362035	24.8
48	620.0	53.6	2225.2	0.25	0.0132	1	0.99	0.3218404	25.1
50	620.0	53.6	2332.4	0.25	0.0132	1	0.99	0.3086598	25.4
52	620.0	53.6	2439.6	0.25	0.0132	1	0.99	0.2965207	25.7
54	620.0	53.6	2546.8	0.25	0.0132	1	0.99	0.2853039	26.0
56	620.0	53.6	2654	0.25	0.0132	1	0.99	0.2749078	26.3
58	620.0	53.6	2761.2	0.25	0.0132	1	0.99	0.2652452	26.5
60	620.0	53.6	2868.4	0.25	0.0132	1	0.99	0.2562409	26.8
62	620.0	53.6	2975.6	0.25	0.0132	1	0.99	0.2478296	27.0
64	620.0	53.6	3082.8	0.25	0.0132	1	0.99	0.2399545	27.3
66	620.0	53.6	3190	0.25	0.0132	1	0.99	0.2325657	27.5
68	620.0	53.6	3297.2	0.25	0.0132	1	0.99	0.2256195	27.7
70	620.0	53.6	3404.4	0.25	0.0132	1	0.99	0.2190771	28.0
72	620.0	53.6	3511.6	0.25	0.0132	1	0.99	0.2129042	28.2
74	620.0	53.6	3618.8	0.25	0.0132	1	0.99	0.2070704	28.4
76	620.0	57.6	3730	0.25	0.0132	1	0.99	0.201348	28.6

MUESER RUTLEDGE CONSULTING ENGINEERS

File No.: 9801

Made by: JR Date: 1/28/08

FOR Willis Semet Bulkhead Design

Checked by: Date:

SUBJECT: Settlement - Design Section 1 - Fill from +359 to +367

Footing Shape ______ (CIR, CONT, SQ, RECT)

Diameter or Length ______ ft

Width ______ ft

Embedment ______

Foundation Load 320.0 psf

Depth increment 2 ft

Water @ 0 feet below GS

Limiting Depth

TOTAL SETTLEMENT 18.1 in

Top of Layer (ft)	Bottom of Layer (ft)	C_C	Cr	γ (pcf)	e_0	OCR	C_v
0	20	0.94	0.019	105	5.13	1	
20	36	0.37	0.0135	110	1.73	1	
36	76	0.25	0.0132	116	0.99	1	

Depth (ft)	Δσz psf	γ' psf	σ'_{midpt} psf	Cc	Cr	OCR	e	δ layer in	δ Total in
0		42.6	0						
2	320.0	42.6	42.6	0.94	0.019	1	5.13	3.4227097	3.4
4	320.0	42.6	127.8	0.94	0.019	1	5.13	2.004098	5.4
6	320.0	42.6	213	0.94	0.019	1	5.13	1.4660232	6.9
8	320.0	42.6	298.2	0.94	0.019	1	5.13	1.1652493	8.1
10	320.0	42.6	383.4	0.94	0.019	1	5.13	0.9699337	9.0
12	320.0	42.6	468.6	0.94	0.019	1	5.13	0.8319395	9.9
14	320.0	42.6	553.8	0.94	0.019	1	5.13	0.7289091	10.6
16	320.0	42.6	639	0.94	0.019	1	5.13	0.6488953	11.2
18	320.0	42.6	724.2	0.94	0.019	1	5.13	0.5848861	11.8
20	320.0	47.6	814.4	0.94	0.019	1	5.13	0.5296943	12.4
22	320.0	47.6	909.6	0.37	0.0135	1	1.73	0.4258282	12.8
24	320.0	47.6	1004.8	0.37	0.0135	1	1.73	0.3905596	13.2
26	320.0	47.6	1100	0.37	0.0135	1	1.73	0.3607156	13.5
28	320.0	47.6	1195.2	0.37	0.0135	1	1.73	0.3351285	13.9
30	320.0	47.6	1290.4	0.37	0.0135	1	1.73	0.3129449	14.2
32	320.0	47.6	1385.6	0.37	0.0135	1	1.73	0.2935257	14.5
34	320.0	47.6	1480.8	0.37	0.0135	1	1.73	0.2763829	14.7
36	320.0	53.6	1582	0.37	0.0135	1	1.73	0.2602329	15.0
38	320.0	53.6	1689.2	0.25	0.0132	1	0.99	0.2271621	15.2
40	320.0	53.6	1796.4	0.25	0.0132	1	0.99	0.2146574	15.4
42	320.0	53.6	1903.6	0.25	0.0132	1	0.99	0.2034602	15.7
44	320.0	53.6	2010.8	0.25	0.0132	1	0.99	0.1933753	15.8
46	320.0	53.6	2118	0.25	0.0132	1	0.99	0.1842445	16.0
48	320.0	53.6	2225.2	0.25	0.0132	1	0.99	0.1759383	16.2
50	320.0	53.6	2332.4	0.25	0.0132	1	0.99	0.1683497	16.4
52	320.0	53.6	2439.6	0.25	0.0132	1	0.99	0.1613895	16.5
54	320.0	53.6	2546.8	0.25	0.0132	1	0.99	0.1549826	16.7
56	320.0	53.6	2654	0.25	0.0132	1	0.99	0.1490655	16.8
58	320.0	53.6	2761.2	0.25	0.0132	1	0.99	0.143584	17.0
60	320.0	53.6	2868.4	0.25	0.0132	1	0.99	0.1384917	17.1
62	320.0	53.6	2975.6	0.25	0.0132	1	0.99	0.1337486	17.3
64	320.0	53.6	3082.8	0.25	0.0132	1	0.99	0.1293198	17.4
66	320.0	53.6	3190	0.25	0.0132	1	0.99	0.1251752	17.5
68	320.0	53.6	3297.2	0.25	0.0132	1	0.99	0.1212881	17.6
70	320.0	53.6	3404.4	0.25	0.0132	1	0.99	0.1176354	17.7
72	320.0	53.6	3511.6	0.25	0.0132	1	0.99	0.1141964	17.9
74	320.0	53.6	3618.8	0.25	0.0132	1	0.99	0.1109528	18.0
76	320.0	57.6	3730	0.25	0.0132	1	0.99	0.1077775	18.1

MUESER RUTLEDGE CONSULTING ENGINEERS

File No.: 9801
Made by: JR Date: 1/28/08
Checked by: Date:

FOR: Willis Semet Bulkhead Design

SUBJECT: Settlement - Design Section 2 - Fill from +357 to +367

Footing Shape ________ (CIR, CONT, SQ, RECT)
Diameter or Length ________ ft
Width ________ ft
Embedment ________
Foundation Load 360.0 psf

Depth increment 2 ft
Water @ 0 feet below GS

Limiting Depth

TOTAL SETTLEMENT 19.6 in

Top of Layer (ft)	Bottom of Layer (ft)	C_C	Cr	γ (pcf)	e_0	OCR	C_v
0	26	0.94	0.019	105	5.13	1	
26	32	0.37	0.0135	110	1.73	1	
32	72	0.25	0.0132	116	0.99	1	

Depth (ft)	Δσz psf	γ' psf	σ'_{midpt} psf	Cc	Cr	OCR	e	δ layer in	δ Total in
0		42.6	0						
2	360.0	42.6	42.6	0.94	0.019	1	5.13	3.5899628	3.6
4	360.0	42.6	127.8	0.94	0.019	1	5.13	2.1408481	5.7
6	360.0	42.6	213	0.94	0.019	1	5.13	1.5816842	7.3
8	360.0	42.6	298.2	0.94	0.019	1	5.13	1.2654586	8.6
10	360.0	42.6	383.4	0.94	0.019	1	5.13	1.0583343	9.6
12	360.0	42.6	468.6	0.94	0.019	1	5.13	0.9110215	10.5
14	360.0	42.6	553.8	0.94	0.019	1	5.13	0.8004502	11.3
16	360.0	42.6	639	0.94	0.019	1	5.13	0.7142085	12.1
18	360.0	42.6	724.2	0.94	0.019	1	5.13	0.644969	12.7
20	360.0	42.6	809.4	0.94	0.019	1	5.13	0.5881053	13.3
22	360.0	42.6	894.6	0.94	0.019	1	5.13	0.5405434	13.8
24	360.0	42.6	979.8	0.94	0.019	1	5.13	0.5001568	14.3
26	360.0	47.6	1070	0.94	0.019	1	5.13	0.4635372	14.8
28	360.0	47.6	1165.2	0.37	0.0135	1	1.73	0.3803318	15.2
30	360.0	47.6	1260.4	0.37	0.0135	1	1.73	0.3549197	15.5
32	360.0	53.6	1361.6	0.37	0.0135	1	1.73	0.3313987	15.9
34	360.0	53.6	1468.8	0.25	0.0132	1	0.99	0.2870459	16.2
36	360.0	53.6	1576	0.25	0.0132	1	0.99	0.2693944	16.4
38	360.0	53.6	1683.2	0.25	0.0132	1	0.99	0.2537944	16.7
40	360.0	53.6	1790.4	0.25	0.0132	1	0.99	0.2399071	16.9
42	360.0	53.6	1897.6	0.25	0.0132	1	0.99	0.2274643	17.1
44	360.0	53.6	2004.8	0.25	0.0132	1	0.99	0.2162513	17.4
46	360.0	53.6	2112	0.25	0.0132	1	0.99	0.2060941	17.6
48	360.0	53.6	2219.2	0.25	0.0132	1	0.99	0.19685	17.8
50	360.0	53.6	2326.4	0.25	0.0132	1	0.99	0.1884009	18.0
52	360.0	53.6	2433.6	0.25	0.0132	1	0.99	0.1806483	18.1
54	360.0	53.6	2540.8	0.25	0.0132	1	0.99	0.1735095	18.3
56	360.0	53.6	2648	0.25	0.0132	1	0.99	0.1669141	18.5
58	360.0	53.6	2755.2	0.25	0.0132	1	0.99	0.1608024	18.6
60	360.0	53.6	2862.4	0.25	0.0132	1	0.99	0.155123	18.8
62	360.0	53.6	2969.6	0.25	0.0132	1	0.99	0.1498315	18.9
64	360.0	53.6	3076.8	0.25	0.0132	1	0.99	0.1448894	19.1
66	360.0	53.6	3184	0.25	0.0132	1	0.99	0.1402633	19.2
68	360.0	53.6	3291.2	0.25	0.0132	1	0.99	0.1359237	19.4
70	360.0	53.6	3398.4	0.25	0.0132	1	0.99	0.1318447	19.5
72	360.0	57.6	3509.6	0.25	0.0132	1	0.99	0.1278647	19.6

MUESER RUTLEDGE CONSULTING ENGINEERS

File No.: 9801
Made by: JR Date: 1/28/08
FOR Willis Semet Bulkhead Design Checked by: Date:

SUBJECT: Settlement - Design Section 2 - Fill from +360 to +372

Footing Shape ________ (CIR, CONT, SQ, RECT)
Diameter or Length ________ ft Depth increment 2 ft
Width ________ ft Water @ 0 feet below GS
Embedment ________
Foundation Load 600.0 psf

Limiting Depth

TOTAL SETTLEMENT 28.1 in

Top of Layer (ft)	Bottom of Layer (ft)	C_C	Cr	γ (pcf)	e_0	OCR	C_v
0	26	0.94	0.019	105	5.13	1	
26	34	0.37	0.0135	110	1.73	1	
34	74	0.25	0.0132	116	0.99	1	

Depth (ft)	Δσz psf	γ' psf	σ'_{midpt} psf	Cc	Cr	OCR	e	δ layer in	δ Total in
0		42.6	0						
2	600.0	42.6	42.6	0.94	0.019	1	5.13	4.3373021	4.3
4	600.0	42.6	127.8	0.94	0.019	1	5.13	2.780368	7.1
6	600.0	42.6	213	0.94	0.019	1	5.13	2.1408481	9.3
8	600.0	42.6	298.2	0.94	0.019	1	5.13	1.7623497	11.0
10	600.0	42.6	383.4	0.94	0.019	1	5.13	1.5055142	12.5
12	600.0	42.6	468.6	0.94	0.019	1	5.13	1.3175809	13.8
14	600.0	42.6	553.8	0.94	0.019	1	5.13	1.1731847	15.0
16	600.0	42.6	639	0.94	0.019	1	5.13	1.0583343	16.1
18	600.0	42.6	724.2	0.94	0.019	1	5.13	0.9645782	17.0
20	600.0	42.6	809.4	0.94	0.019	1	5.13	0.8864684	17.9
22	600.0	42.6	894.6	0.94	0.019	1	5.13	0.8203158	18.7
24	600.0	42.6	979.8	0.94	0.019	1	5.13	0.7635242	19.5
26	600.0	47.6	1070	0.94	0.019	1	5.13	0.7115148	20.2
28	600.0	47.6	1165.2	0.37	0.0135	1	1.73	0.5867743	20.8
30	600.0	47.6	1260.4	0.37	0.0135	1	1.73	0.5500328	21.4
32	600.0	47.6	1355.6	0.37	0.0135	1	1.73	0.5176697	21.9
34	600.0	53.6	1456.8	0.37	0.0135	1	1.73	0.4872359	22.4
36	600.0	53.6	1564	0.25	0.0132	1	0.99	0.4251875	22.8
38	600.0	53.6	1671.2	0.25	0.0132	1	0.99	0.4016893	23.2
40	600.0	53.6	1778.4	0.25	0.0132	1	0.99	0.3806697	23.6
42	600.0	53.6	1885.6	0.25	0.0132	1	0.99	0.3617538	23.9
44	600.0	53.6	1992.8	0.25	0.0132	1	0.99	0.3446391	24.3
46	600.0	53.6	2100	0.25	0.0132	1	0.99	0.3290788	24.6
48	600.0	53.6	2207.2	0.25	0.0132	1	0.99	0.3148693	24.9
50	600.0	53.6	2314.4	0.25	0.0132	1	0.99	0.3018414	25.2
52	600.0	53.6	2421.6	0.25	0.0132	1	0.99	0.289853	25.5
54	600.0	53.6	2528.8	0.25	0.0132	1	0.99	0.2787839	25.8
56	600.0	53.6	2636	0.25	0.0132	1	0.99	0.268532	26.1
58	600.0	53.6	2743.2	0.25	0.0132	1	0.99	0.2590097	26.3
60	600.0	53.6	2850.4	0.25	0.0132	1	0.99	0.2501416	26.6
62	600.0	53.6	2957.6	0.25	0.0132	1	0.99	0.2418623	26.8
64	600.0	53.6	3064.8	0.25	0.0132	1	0.99	0.234115	27.0
66	600.0	53.6	3172	0.25	0.0132	1	0.99	0.2268498	27.3
68	600.0	53.6	3279.2	0.25	0.0132	1	0.99	0.2200229	27.5
70	600.0	53.6	3386.4	0.25	0.0132	1	0.99	0.2135958	27.7
72	600.0	53.6	3493.6	0.25	0.0132	1	0.99	0.2075343	27.9
74	600.0	57.6	3604.8	0.25	0.0132	1	0.99	0.2016005	28.1

MUESER RUTLEDGE CONSULTING ENGINEERS

File No.: 9801

Made by: JR Date: 1/28/08

FOR Willis Semet Bulkhead Design

Checked by: Date:

SUBJECT: Settlement - Design Section 3 - Fill from +348 to +367

Footing Shape ______ (CIR, CONT, SQ, RECT)

Diameter or Length ______ ft

Width ______ ft

Embedment ______

Foundation Load 540.0 psf

Depth increment 2 ft

Water @ 0 feet below GS

Limiting Depth

TOTAL SETTLEMENT 24.8 in

Top of Layer (ft)	Bottom of Layer (ft)	C_C	Cr	γ (pcf)	e_0	OCR	C_v
0	20	0.94	0.019	105	5.13	1	
20	26	0.37	0.0135	110	1.73	1	
26	66	0.25	0.0132	116	0.99	1	

Depth (ft)	Δσz psf	γ' psf	σ'_{midpt} psf	Cc	Cr	OCR	e	δ layer in	δ Total in
0		42.6	0						
2	540.0	42.6	42.6	0.94	0.019	1	5.13	4.1806325	4.2
4	540.0	42.6	127.8	0.94	0.019	1	5.13	2.6428527	6.8
6	540.0	42.6	213	0.94	0.019	1	5.13	2.0183117	8.8
8	540.0	42.6	298.2	0.94	0.019	1	5.13	1.6518484	10.5
10	540.0	42.6	383.4	0.94	0.019	1	5.13	1.4048946	11.9
12	540.0	42.6	468.6	0.94	0.019	1	5.13	1.2252203	13.1
14	540.0	42.6	553.8	0.94	0.019	1	5.13	1.0878298	14.2
16	540.0	42.6	639	0.94	0.019	1	5.13	0.9789971	15.2
18	540.0	42.6	724.2	0.94	0.019	1	5.13	0.8904659	16.1
20	540.0	47.6	814.4	0.94	0.019	1	5.13	0.8130034	16.9
22	540.0	47.6	909.6	0.37	0.0135	1	1.73	0.6583487	17.6
24	540.0	47.6	1004.8	0.37	0.0135	1	1.73	0.6075892	18.2
26	540.0	53.6	1106	0.37	0.0135	1	1.73	0.5616672	18.7
28	540.0	53.6	1213.2	0.25	0.0132	1	0.99	0.4821077	19.2
30	540.0	53.6	1320.4	0.25	0.0132	1	0.99	0.4489472	19.7
32	540.0	53.6	1427.6	0.25	0.0132	1	0.99	0.4200913	20.1
34	540.0	53.6	1534.8	0.25	0.0132	1	0.99	0.3947471	20.5
36	540.0	53.6	1642	0.25	0.0132	1	0.99	0.3723063	20.8
38	540.0	53.6	1749.2	0.25	0.0132	1	0.99	0.3522943	21.2
40	540.0	53.6	1856.4	0.25	0.0132	1	0.99	0.3343349	21.5
42	540.0	53.6	1963.6	0.25	0.0132	1	0.99	0.3181264	21.8
44	540.0	53.6	2070.8	0.25	0.0132	1	0.99	0.3034235	22.1
46	540.0	53.6	2178	0.25	0.0132	1	0.99	0.2900249	22.4
48	540.0	53.6	2285.2	0.25	0.0132	1	0.99	0.2777638	22.7
50	540.0	53.6	2392.4	0.25	0.0132	1	0.99	0.2665008	23.0
52	540.0	53.6	2499.6	0.25	0.0132	1	0.99	0.2561184	23.2
54	540.0	53.6	2606.8	0.25	0.0132	1	0.99	0.2465169	23.5
56	540.0	53.6	2714	0.25	0.0132	1	0.99	0.2376112	23.7
58	540.0	53.6	2821.2	0.25	0.0132	1	0.99	0.2293281	24.0
60	540.0	53.6	2928.4	0.25	0.0132	1	0.99	0.2216044	24.2
62	540.0	53.6	3035.6	0.25	0.0132	1	0.99	0.2143851	24.4
64	540.0	53.6	3142.8	0.25	0.0132	1	0.99	0.2076223	24.6
66	540.0	57.6	3254	0.25	0.0132	1	0.99	0.2010446	24.8

MUESER RUTLEDGE CONSULTING ENGINEERS

File No.: 9801

Made by: JR   Date: 1/28/08

FOR Willis Semet Bulkhead Design   Checked by: ____   Date: ____

SUBJECT: Settlement - Design Section 3 - Fill from +349 to +372

Footing Shape ____ (CIR, CONT, SQ, RECT)

Diameter or Length ____ ft   Depth increment 2 ft

Width ____ ft   Water @ 0 feet below GS

Embedment ____

Foundation Load 820.0 psf

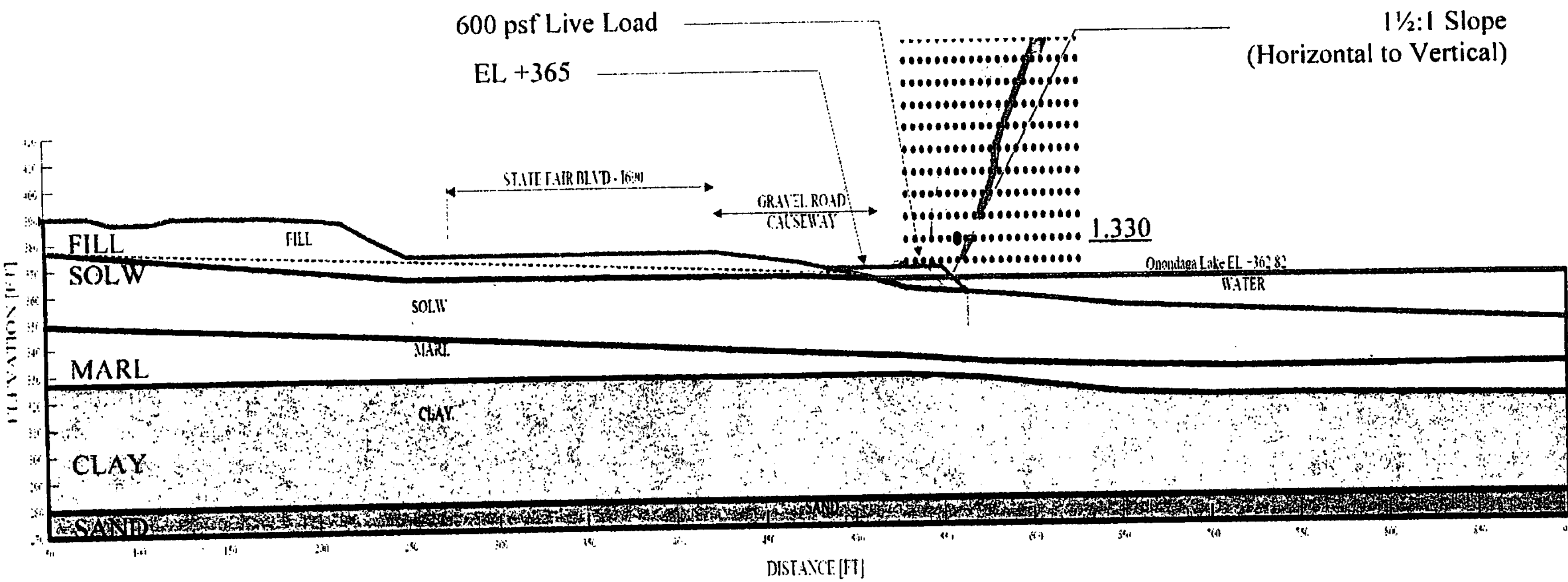
Limiting Depth

TOTAL SETTLEMENT 32.4 in

Top of Layer (ft)	Bottom of Layer (ft)	C_c	Cr	γ (pcf)	e_0	OCR	C_v
0	20	0.94	0.019	105	5.13	1	
20	26	0.37	0.0135	110	1.73	1	
26	66	0.25	0.0132	116	0.99	1	

Depth (ft)	Δσz psf	γ' psf	σ'_{midpt} psf	Cc	Cr °	OCR	e	δ layer in	δ Total in
0		42.6	0						
2	820.0	42.6	42.6	0.94	0.019	1	5.13	4.8078925	4.8
4	820.0	42.6	127.8	0.94	0.019	1	5.13	3.2025111	8.0
6	820.0	42.6	213	0.94	0.019	1	5.13	2.5236312	10.5
8	820.0	42.6	298.2	0.94	0.019	1	5.13	2.1125134	12.6
10	820.0	42.6	383.4	0.94	0.019	1	5.13	1.8281987	14.5
12	820.0	42.6	468.6	0.94	0.019	1	5.13	1.616797	16.1
14	820.0	42.6	553.8	0.94	0.019	1	5.13	1.4521227	17.5
16	820.0	42.6	639	0.94	0.019	1	5.13	1.3195739	18.9
18	820.0	42.6	724.2	0.94	0.019	1	5.13	1.2102355	20.1
20	820.0	47.6	814.4	0.94	0.019	1	5.13	1.1133547	21.2
22	820.0	47.6	909.6	0.37	0.0135	1	1.73	0.9078262	22.1
24	820.0	47.6	1004.8	0.37	0.0135	1	1.73	0.8429028	22.9
26	820.0	53.6	1106	0.37	0.0135	1	1.73	0.7835906	23.7
28	820.0	53.6	1213.2	0.25	0.0132	1	0.99	0.6761237	24.4
30	820.0	53.6	1320.4	0.25	0.0132	1	0.99	0.6325309	25.0
32	820.0	53.6	1427.6	0.25	0.0132	1	0.99	0.594309	25.6
34	820.0	53.6	1534.8	0.25	0.0132	1	0.99	0.5605093	26.2
36	820.0	53.6	1642	0.25	0.0132	1	0.99	0.5303967	26.7
38	820.0	53.6	1749.2	0.25	0.0132	1	0.99	0.5033923	27.2
40	820.0	53.6	1856.4	0.25	0.0132	1	0.99	0.4790336	27.7
42	820.0	53.6	1963.6	0.25	0.0132	1	0.99	0.4569461	28.2
44	820.0	53.6	2070.8	0.25	0.0132	1	0.99	0.4368238	28.6
46	820.0	53.6	2178	0.25	0.0132	1	0.99	0.4184133	29.0
48	820.0	53.6	2285.2	0.25	0.0132	1	0.99	0.4015036	29.4
50	820.0	53.6	2392.4	0.25	0.0132	1	0.99	0.3859171	29.8
52	820.0	53.6	2499.6	0.25	0.0132	1	0.99	0.3715032	30.2
54	820.0	53.6	2606.8	0.25	0.0132	1	0.99	0.3581338	30.5
56	820.0	53.6	2714	0.25	0.0132	1	0.99	0.3456986	30.9
58	820.0	53.6	2821.2	0.25	0.0132	1	0.99	0.3341025	31.2
60	820.0	53.6	2928.4	0.25	0.0132	1	0.99	0.3232629	31.5
62	820.0	53.6	3035.6	0.25	0.0132	1	0.99	0.3131078	31.8
64	820.0	53.6	3142.8	0.25	0.0132	1	0.99	0.3035741	32.1
66	820.0	57.6	3254	0.25	0.0132	1	0.99	0.2942818	32.4

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	Water	No strength	62.4		
2	Dry LW Fill	Mohr-Coulomb	60	0	40
3	Wet LW Fill	Mohr-Coulomb	80	0	40
4	Existing Fill	Mohr-Coulomb	105	200	20
5	Silt	Mohr-Coulomb	105	200	20
6	Solvay Waste	Mohr-Coulomb	110	100	25
7	Marl	Undrained	105	450	0
8	Clay	Undrained	117	400	0
9	Sand	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

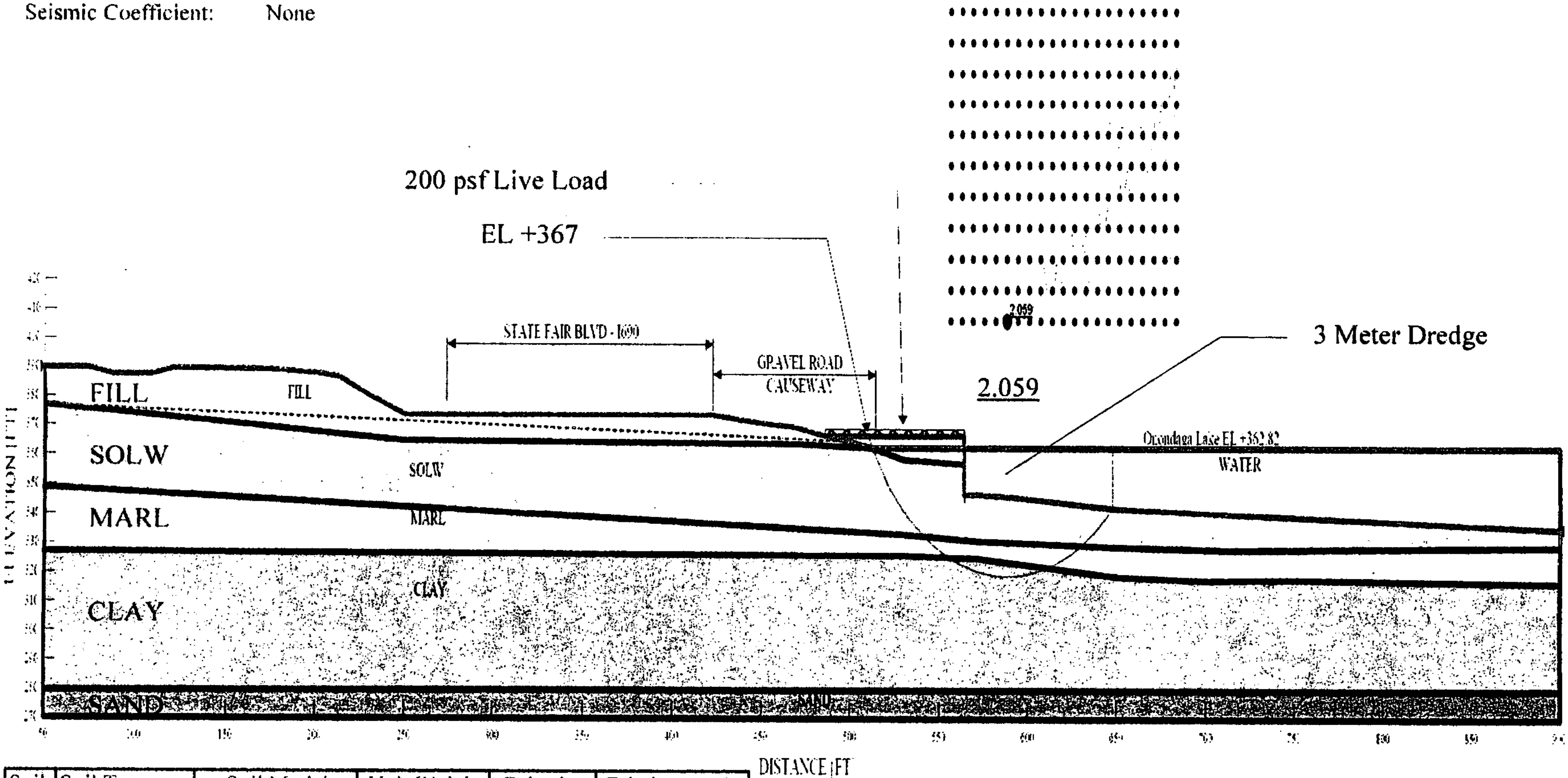
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: JLR	DATE: 01-29-07	FILE No.
AS SHOWN	CH'KD BY:	DATE:	9801
	DESIGN SECTION 2		CASE
	24' WIDE CRANE LOAD SET 3' BACK FROM SLOPE		DS – 2A

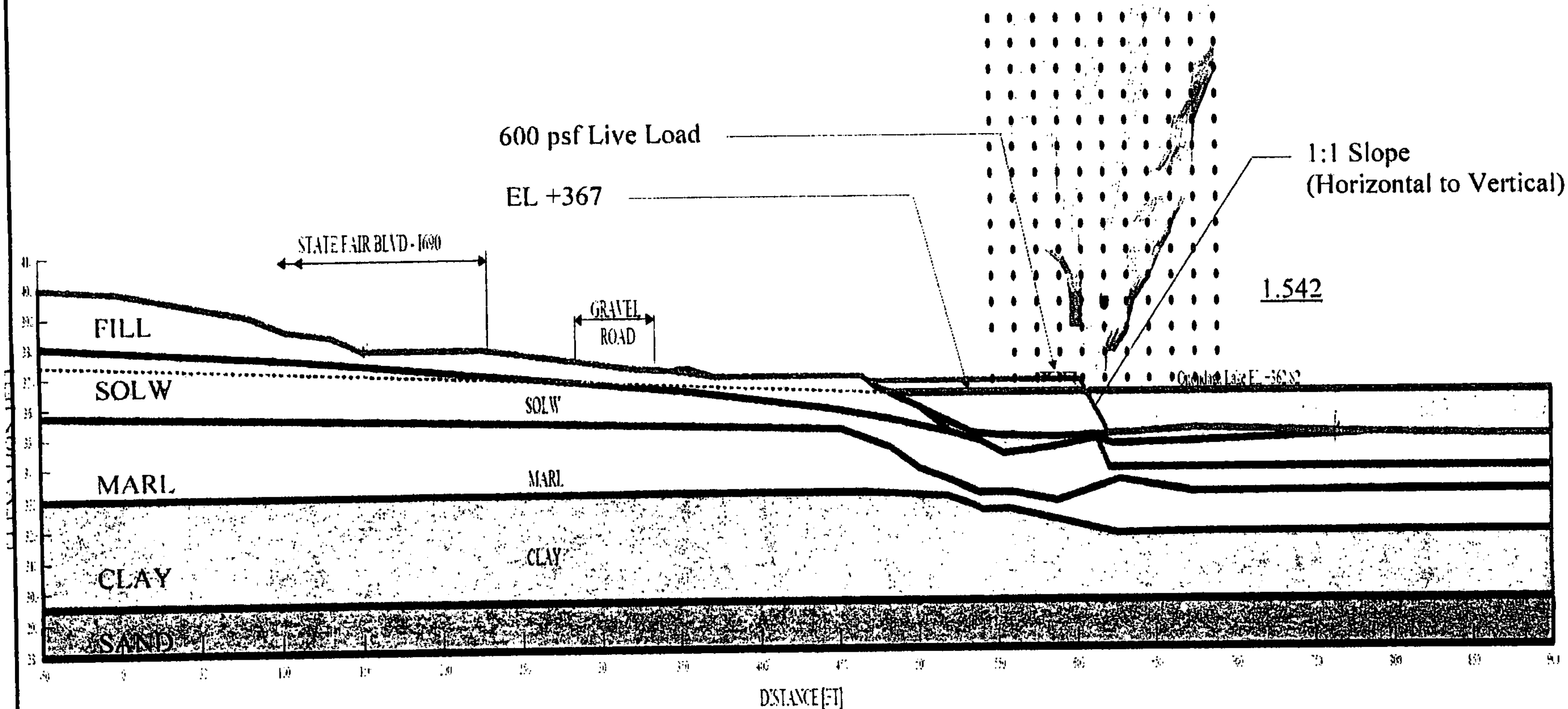
Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	Water	No strength	62.4		
2	Dry LW Fill	Mohr-Coulomb	60	0	40
3	Wet LW Fill	Mohr-Coulomb	80	0	40
4	Existing Fill	Mohr-Coulomb	105	200	20
5	Silt	Mohr-Coulomb	105	200	20
6	Solvay Waste	Mohr-Coulomb	110	100	25
7	Marl	Undrained	105	450	0
8	Clay	Undrained	117	400	0
9	Sand	Mohr-Coulomb	120	0	34
10	Rip Rap	Mohr-Coulomb	140	0	40

WILLIS / SEMET SITE			
SYRACUSE			NY
MUESER RUTLEDGE CONSULTING ENGINEERS			
225 WEST 34TH STREET, NEW YORK NY 10122			
SCALE	MADE BY: JLR	DATE: 01-29-07	FILE No.
AS SHOWN	CH'KD BY:	DATE:	9801
DESIGN SECTION 2			CASE
WORK PLATFORM – 3 METER DREDGE			DS – 2B

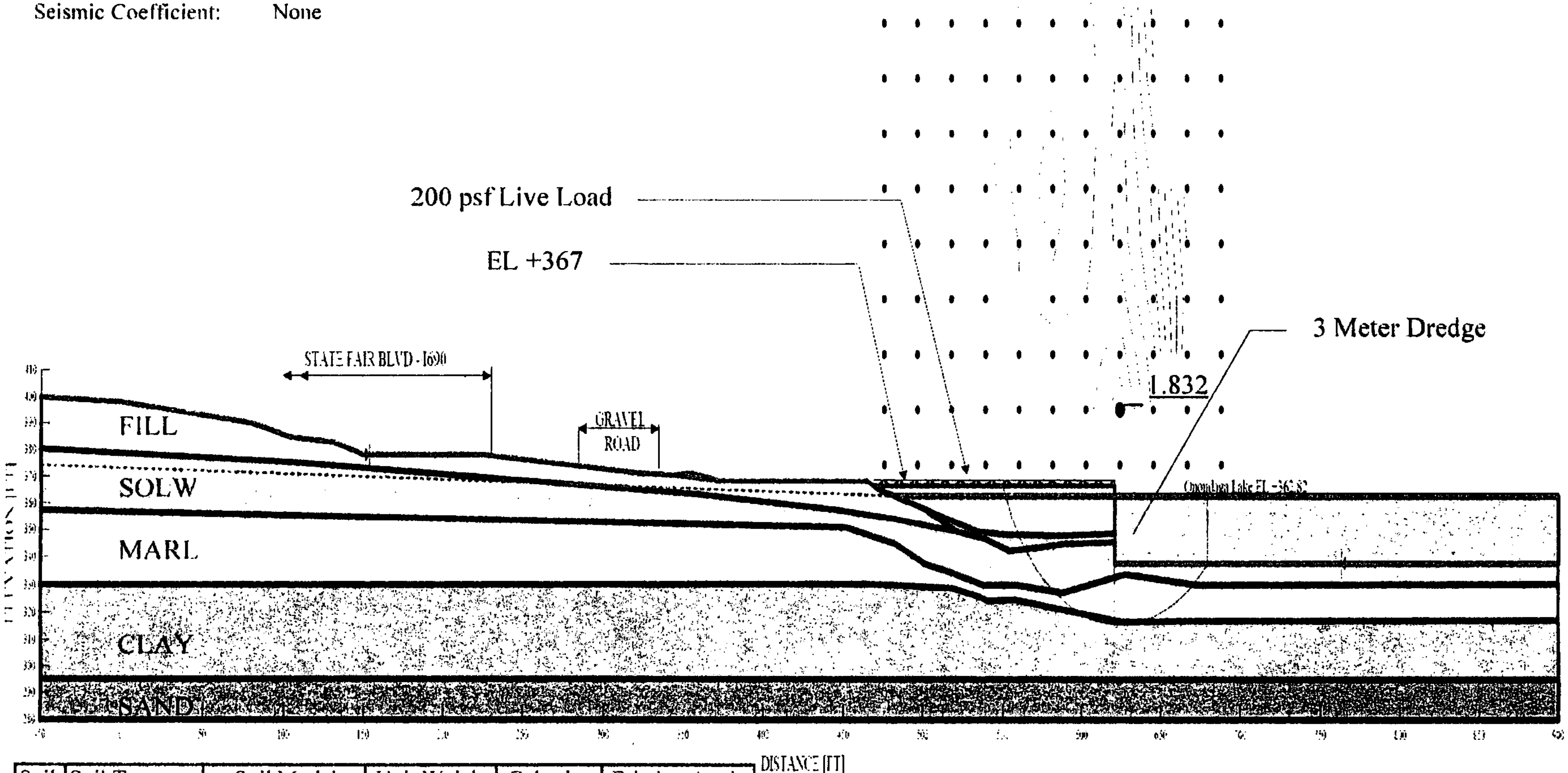
Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	Water	No strength	62.4		
2	Dry LW Fill	Mohr-Coulomb	60	0	40
3	Wet LW Fill	Mohr-Coulomb	80	0	40
4	Existing Fill	Mohr-Coulomb	105	200	20
5	Silt	Mohr-Coulomb	105	200	20
6	Solvay Waste	Mohr-Coulomb	110	100	25
7	Marl	Undrained	105	450	0
8	Clay	Undrained	117	400	0
9	Sand	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE			
SYRACUSE			NY
MUESER RUTLEDGE CONSULTING ENGINEERS			
225 WEST 34TH STREET, NEW YORK NY 10122			
SCALE	MADE BY: JLR	DATE: 01-31-07	FILE No.
AS SHOWN	CH'KD BY:	DATE:	9801
DESIGN SECTION 2			CASE
24' WIDE CRANE LOAD SET 3' BACK FROM SLOPE			DS – 2A

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	Water	No strength	62.4		
2	Dry LW Fill	Mohr-Coulomb	60	0	40
3	Wet LW Fill	Mohr-Coulomb	80	0	40
4	Existing Fill	Mohr-Coulomb	105	200	20
5	Silt	Mohr-Coulomb	105	200	20
6	Solvay Waste	Mohr-Coulomb	110	100	25
7	Marl	Undrained	105	450	0
8	Clay	Undrained	117	400	0
9	Sand	Mohr-Coulomb	120	0	34
10	Rip Rap	Mohr-Coulomb	140	0	40

WILLIS / SEMET SITE

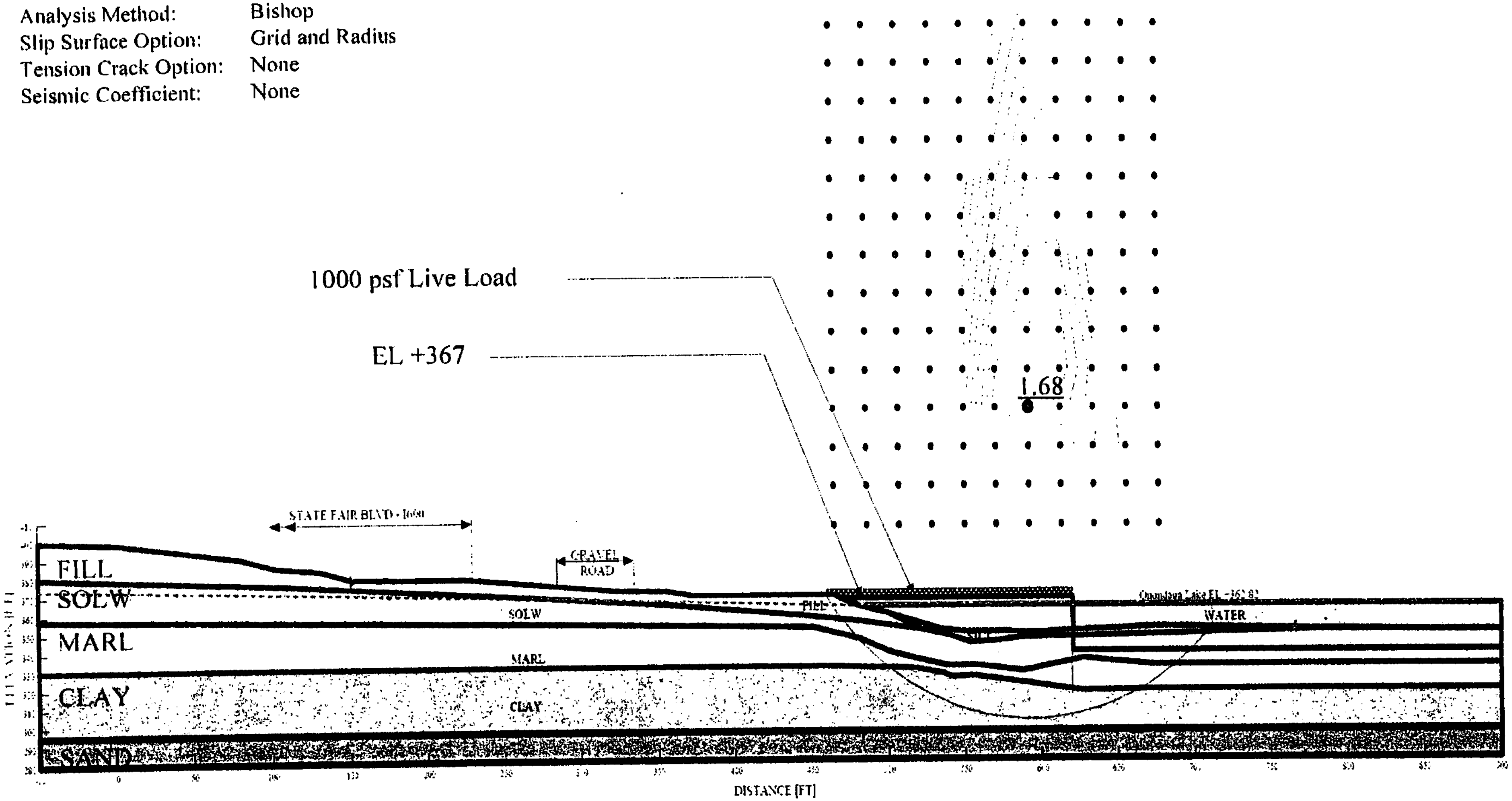
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: JLR	DATE: 01-29-07	FILE No.
AS SHOWN	CH'KD BY:	DATE:	9801
DESIGN SECTION 3			CASE
WORK PLATFORM – 3 METER DREDGE			DS – 3B

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	Water	No strength	62.4		
2	Dry LW Fill	Mohr-Coulomb	60	0	40
3	Wet LW Fill	Mohr-Coulomb	80	0	40
4	Existing Fill	Mohr-Coulomb	105	200	20
5	Silt	Mohr-Coulomb	105	200	20
6	Solvay Waste	Mohr-Coulomb	110	100	25
7	Marl	Undrained	105	450	0
8	Clay	Undrained	117	400	0
9	Sand	Mohr-Coulomb	120	0	34
10	Rip Rap	Mohr-Coulomb	140	0	40

WILLIS / SEMET SITE

SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: JLR	DATE: 02-14-08	FILE No.
AS SHOWN	CH'KD BY:	DATE:	9801
	DESIGN SECTION 3		CASE
	MARINE FACILITY LOADING, PRIOR TO DREDGE		DS – 3C

Section N

Stability Analyses

MUESER RUTLEDGE
Consulting Engineers
14 Penn Plaza • 225 West 34th Street • New York, NY 10122
Tel: (917) 339-9300 • Fax: (917) 339-9400
www.mrce.com

August 8, 2006

Mr. John McAuliffe, Program Director
Honeywell
5000 Brittonfield Parkway, Suite 700
East Syracuse, NY 103057

Re: Global Stability Analysis
ROD Remedy Bulkhead Alignment and Dredge Depth
Offshore of Causeway and SMU 1
Willis/Semet Site, Syracuse, New York
MRCE File 9801

Dear Mr. McAuliffe:

At your request, we document herein global stability analysis cases, assumptions, and results. This review examined global stability along the hydraulic barrier sheet pile alignment immediately outboard and south of the Causeway structure. The analysis is based on the hydraulic barrier terminating in the silt and clay layer designated as Stratum M2. The barrier alignment assumed for this analysis is 20 feet outboard of the causeway and immediately along the shoreline south of the causeway, as shown in Figure 1. The stability analysis assumes a dredge depth as required by the Onondaga Lake Record of Decision (ROD) to remove deep soils underlying lake sediments which are contaminated with non-aqueous phase liquid (NAPL), as well as for shallower depths to remove in-lake waste deposits offshore of the causeway in Sediment Management Unit 2 (SMU-2) and in SMU-1. The dredge depths used in this analysis, 7.5 m (25 ft) in SMU-2 offshore of the causeway, and 6.7 m (22 ft) in the adjacent SMU-1 are based on the pre-design investigation work performed by Parsons in 2005 and 2006.

SOIL PROFILE DEVELOPMENT

The two soil profiles analyzed, Cross Sections A and B, are located on Figures 1 and 2 and shown in Figures 3 and 4. Cross Section A is representative of the causeway area in SMU-2. Cross Section B represents the geologic profile in SMU-1 south of the causeway structure. Soil profiles A and B were prepared by Parsons using data obtained in the 2005-2006 offshore boring program, as well as previous investigations.

Although discontinuous layers of sandy soils were occasionally observed between the Marl (Stratum M1) and the silt and clay layer (Stratum M2), these sandy soils were not included in the design soil profiles. It is typical for Stratum M1 to directly overlie Stratum M2. The analysis profile therefore represents the more general as well as severe stability case. Stratum S2 underlies the marl and is a compact sand. Analyses show that the underlying sand is not involved in potential failure planes.

SOIL PROPERTIES

Soil properties used in the stability analysis were selected by MRCE based on a review of the soil properties compiled from historical data; from information such as laboratory strength data and Cone Penetrometer Test (CPT) data collected as part of the pre-design investigations in 2005 and 2006; and by calculation using overburden pressures. The undrained shear strengths used for the Marl (Stratum M1) and for the underlying silt and clay (Stratum M2) are in agreement with the CPT-derived strengths and/or strengths estimated by the ratio of shear strength (C), to existing vertical effective overburden (Po). The C/Po ratio is a means to estimate the strength of normally consolidated clays based on the prevailing vertical effective overburden pressure. In all cases, the design shear strengths selected for this analysis equaled or exceeded the shear strength derived from the C/Po calculation. Strengths were not increased to account for consolidation to the proposed new fill loads. Soil properties used for both profiles are summarized on the output of each analysis case and are also listed below:

STRATUM	UNIT WEIGHT (PCF)	SHEAR STRENGTH (PSF)	FRICTION ANGLE (degrees)
New sand fill	105	0	29
F1- fill	105	200	20
F2 – Solvay Waste	110	100	25
M1- Marl	105	450	0
M2- Silt and Clay	117	400	0
S2 - Sand	120	0	34
In-lake Silt	105	200	20

SLOPE STABILITY ANALYSIS

The stability analysis was performed using the Bishop analysis method by the program Slope/W 2004 published by Geo-Slope, International. The stability analysis is based on two-dimensional conditions, which is appropriate for the removal scenarios evaluated for both design soil profiles.

Soil Profile A - SMU-2 Causeway Alignment

Cases A1 through A5 were evaluated for Soil Profile A (SMU-2) which places the hydraulic barrier sheet pile alignment 20 ft outboard of the causeway. Analysis output is attached as Appendix A. The graphic (contours) above each section represent the model calculated factors of safety. The cases evaluated and resulting factors of safety are provided in Table 1.

Table 1 – Soil Profile A Causeway - Analysis Cases and Computed Factors of Safety

	CASE	DREDGE DEPTH	FACTOR OF SAFETY
A1	Existing Condition	None	1.54
A2	Barrier 20 ft outboard of causeway, Fill upland to Elev. +371	None	1.53
A3	Barrier 20 ft. outboard of causeway, Fill upland to Elev. +371	2 meters	1.31
A4	Barrier 20 ft. outboard of causeway, Fill upland to Elev. +371	3 meters	1.27
A5	Barrier 20 ft. outboard of causeway, Fill upland to Elev. +371, width of dredging 30 ft.	7.5 meters	1.05

Soil Profile B – SMU-1 Area

Cases B1 through B3 were evaluated for Soil Profile B in SMU-1, south of the causeway structure. Analysis output is attached. The cases evaluated and resulting factors of safety are provided in Table 2.

Table 2 – Soil Profile B SMU-1 - Analysis Cases and Computed Factors of Safety

	CASE	DREDGE DEPTH	FACTOR OF SAFETY
B1	Existing Condition	None	1.64
B2	Barrier at shoreline, Fill upland to Elev. +371	None	1.66
B3	Barrier at shoreline, Fill upland to Elev. +371, width of dredging 120 ft.	6.7 meters	1.06

DISCUSSION OF RESULTS

Under existing conditions, for soil Profile A (SMU-2), the critical failure surface has a factor of safety of about 1.5. For the prevailing (existing) conditions for Soil Profile B (SMU-1) the factor of safety for the critical failure surface is about FS=1.6. The difference is attributed to the slightly different case geometry (ground surface and subsurface profiles, material thickness and depth, mudline profile and elevation, etc).

For reference, the minimum allowable FS for stability acceptable to the Federal Highway Administration, as published in their technical literature, is 1.3 for the temporary case and 1.5 for the permanent case. These criteria are directly applicable given the proximity of Interstate Highway I-690, and are reasonable and widely used. The temporary condition applies in this case because the mudline would be rebuilt with imported granular fill as part of the cap construction after dredging is complete.

Figure 5 summarizes the results of the analyses presented in Tables 1 and 2 above, and illustrates the change in factor of safety with dredging depth. Dredging removes weight from the toe of the critical slip circles, reducing a substantial resisting force and increasing the force imbalance. The causeway Profile A can sustain about 2 meters of dredging, and Profile B can sustain about 4 meters of dredging before the global stability factor of safety drops below FS=1.3.

Neither the causeway Profile A, nor Profile B can support the ROD-specified dredge depth. For both soil profiles, the factor of safety for global stability drops below the allowable criterion (FS=1.3) before reaching a dredge depth sufficient to remove NAPL.

We note from inspection of the critical slip circles determined for Profile A (comparing the initial conditions Case A1 to the 20 foot offset Case A2), that although the critical slip surface moves towards the lake when the hydraulic barrier is placed 20 feet outboard of the causeway, the critical slip surfaces will still intersect I-690. The analysis indicates offset distances more than 20 feet will be required to move the inboard edge of the potential slip surfaces outboard of the highway and utilities, even for shallow dredging.

The critical slip circles extend through the clay aquitard of Stratum M2 Clay. Therefore, a structure which would support the shoreline to permit the ROD-specified dredging would have to penetrate through the bottom of the aquitard Clay into the underlying sand, till and bedrock in order to increase the factor of safety to an acceptable level. Those penetrations are undesirable, as they may compromise the hydraulic impermeability of Stratum M2. As the forces driving the instability are large, we estimate that a structure capable of providing sufficient resistance to raise global safety would be large in scale and would require numerous penetrations of the aquitard clay immediately underlying the NAPL.

SUMMARY AND CONCLUSIONS

The ROD remedy includes construction of a hydraulic barrier closing with the aquitard Clay, and dredging outboard of the hydraulic barrier to remove NAPL. Based on the collection of data during the pre-design investigation and geotechnical evaluations conducted after issuance of the ROD, it was determined that the hydraulic barrier wall at the shoreline in the vicinity of the causeway (SMU-2) and a small portion of SMU-1, as described in the ROD, or even 20 feet out from the causeway in SMU-2, would not be feasible for the following reasons:

- Global stability analysis has determined that the ROD-specified dredging to depths sufficient to remove NAPL will cause the lake shoreline to become unstable.

- The instability as it pertains to the SMU 2 causeway area covers a large enough area so as to likely incorporate highway I-690 and the numerous utilities between the highway and the causeway.

A structure of sufficient capacity to support the shoreline so that ROD-specified dredging can be performed, however, it would need to penetrate through the confining aquitard clay which immediately underlies the NAPL, which is undesirable.

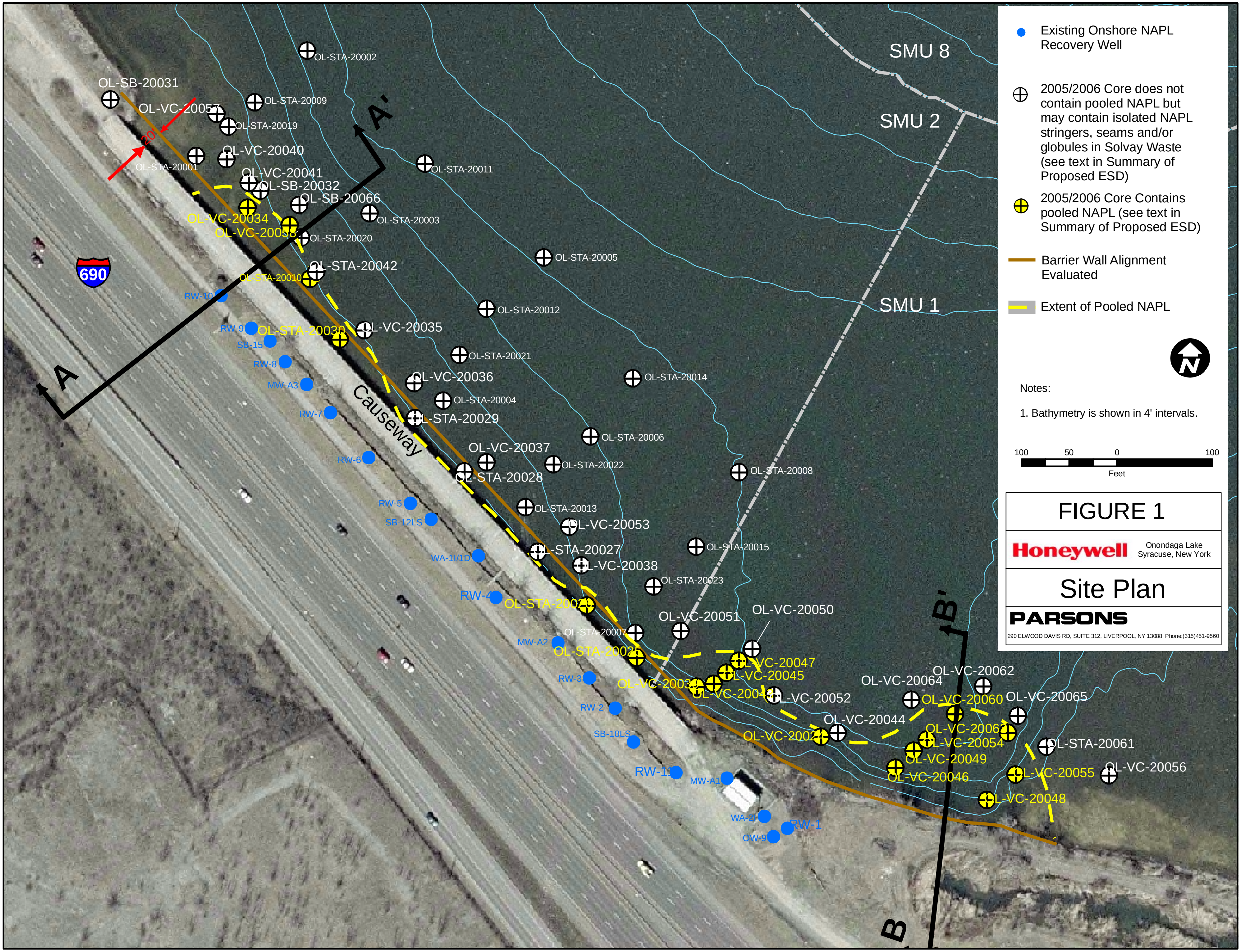
Please do not hesitate to contact us if you have any questions regarding the content of this report.

Very truly yours,

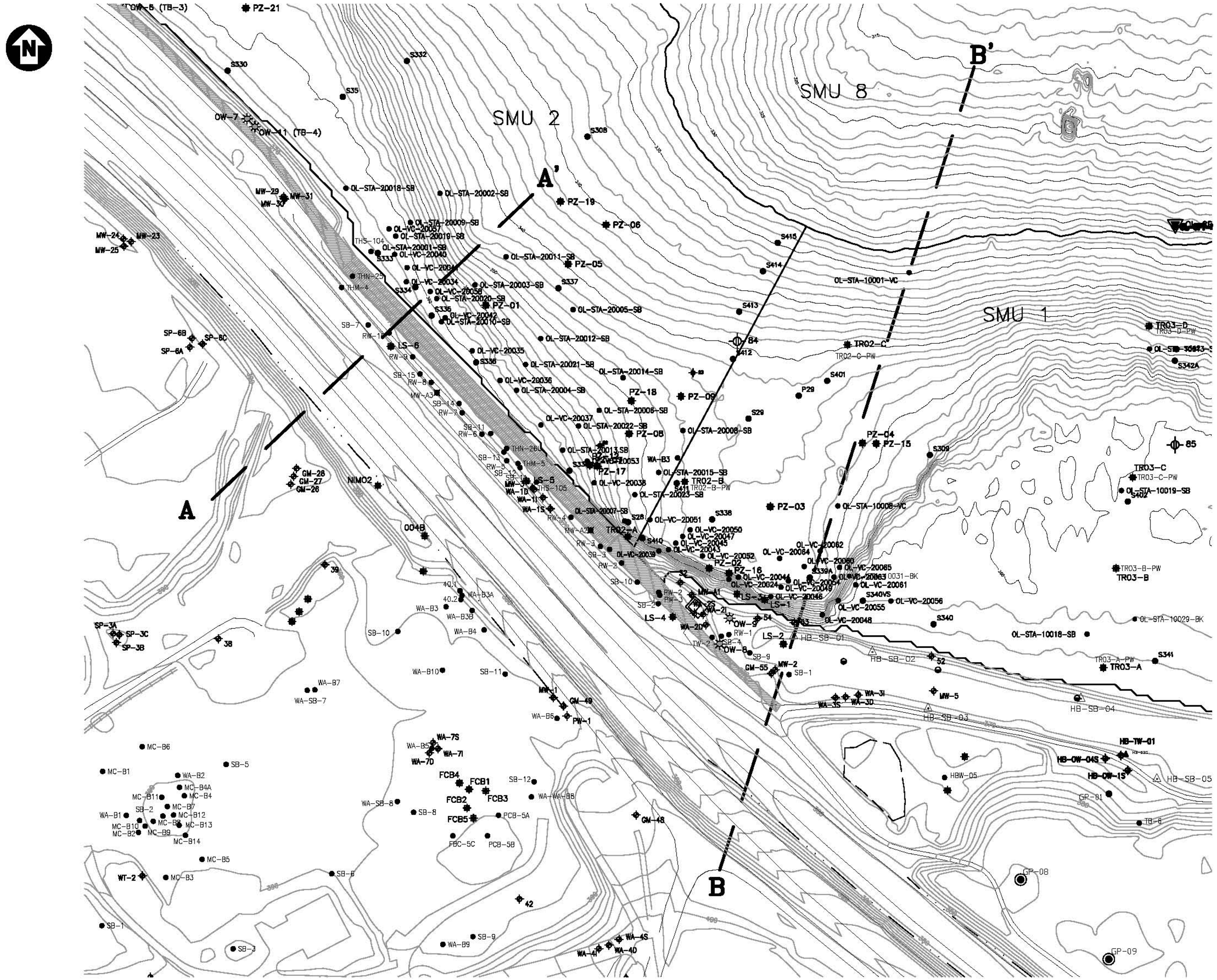
MUESER RUTLEDGE CONSULTING ENGINEERS

By: D. R. Good
David R. Good

Attachments
DRG:PWD:F:\98\9801\GLOBAL STABILITY\global stablity analysis2 (2).doc



Q:\GIS\GIS_Lake\dnapl_invest\pooled_napl_barr_wall_8-08-06.mxd



SECTION LOCATIONS

SCALE: 1"-200'-0"

THIS DRAWING TO BE PLOTTED AT 11x17.
ANY OTHER SIZE VOIDS THE SCALE.

DATE: 7/20/06 JR
P:\H'WELL-SYR\442202\10\10.1\CROSS-SECTIONS-2006\SECTIONS-4TOM.DWG

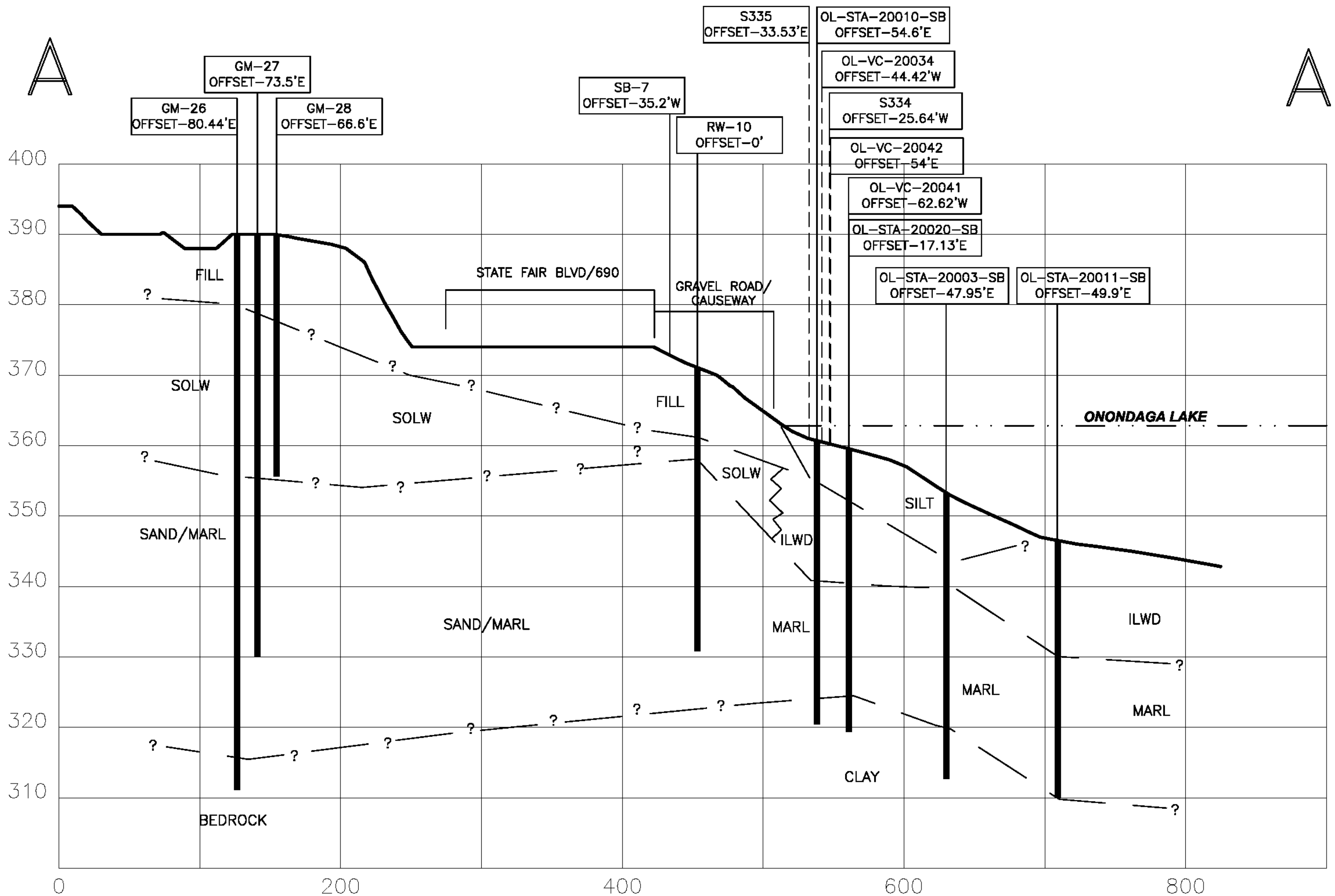
FIGURE 2

Honeywell ONONDAGA LAKE SYRACUSE, NEW YORK

ONONDAGA LAKE PDI
SYRACUSE, NEW YORK

SECTION LOCATIONS

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560



SOLW – SOLVAY WASTE

ILWD – IN-LAKE WASTE DEPOSIT

A–A'

Vertical: 1"–20'–0"
Horizontal: 1"–100'–0"

100 50 0 100 200
SCALE: 1"=100'

20 10 0 20 40
SCALE: 1"=20'

THIS DRAWING TO BE PLOTTED AT 11x17.
ANY OTHER SIZE VOIDS THE SCALE.

DATE: 7/20/06 JR
P:\H'WELL-SYR\442202\10\10.1\CROSS-SECTIONS-2006\SECTIONS-4TOM.DWG

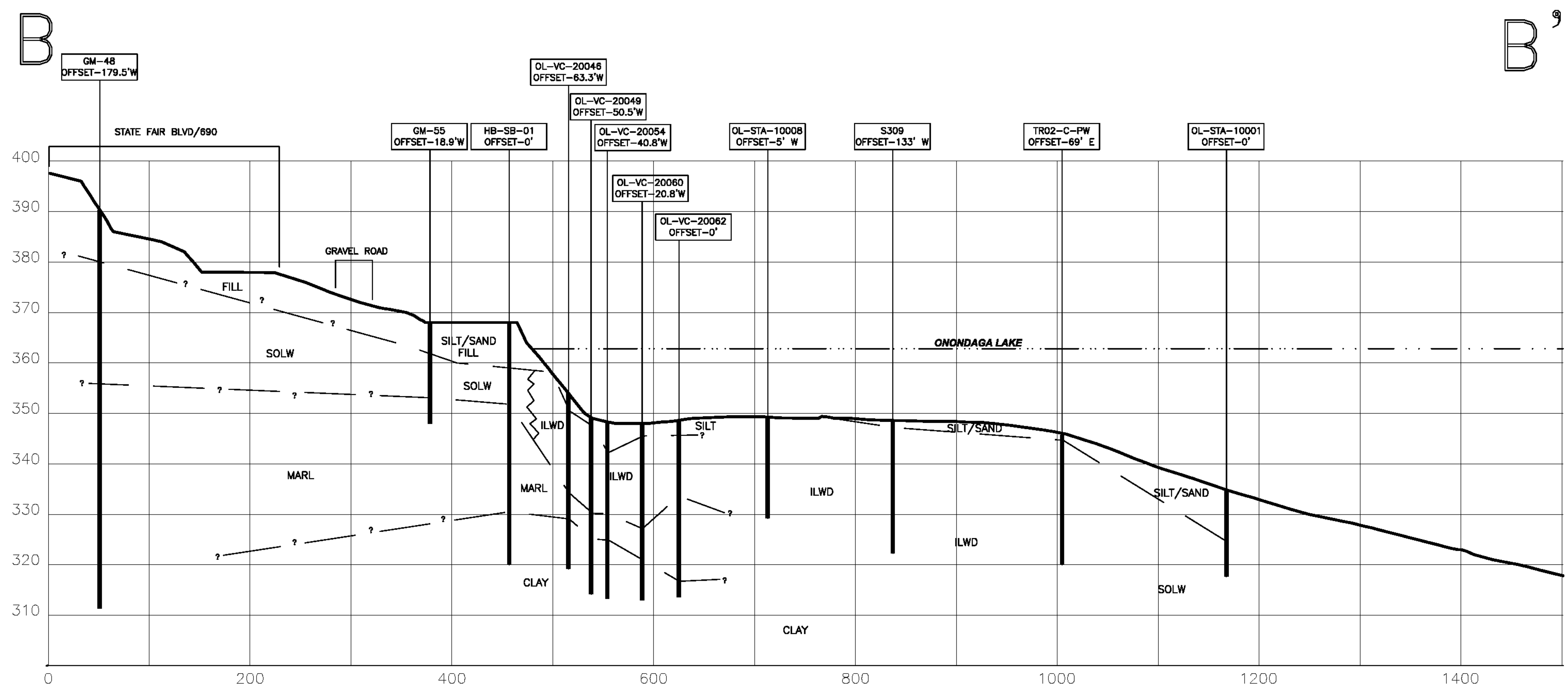
FIGURE 3

Honeywell ONONDAGA LAKE
SYRACUSE, NEW YORK

ONONDAGA LAKE PDI
SYRACUSE, NEW YORK

CROSS SECTION A–A'

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560



B–B'

Vertical: 1"–20'–0"
Horizontal: 1"–100'–0"

SOLW – SOLVAY WASTE

ILWD – IN-LAKE WASTE DEPOSIT

100 50 0 100 200

SCALE: 1"=100'

20 10 0 20 40

SCALE: 1"=20'

THIS DRAWING TO BE PLOTTED AT 11x17.
ANY OTHER SIZE VOIDS THE SCALE.

FIGURE 4

Honeywell ONONDAGA LAKE SYRACUSE, NEW YORK

ONONDAGA LAKE PDI
SYRACUSE, NEW YORK

CROSS SECTION B–B'

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

DATE: 7/20/06 JR
P:\H'WELL-SYR\442202\10\10.1\CROSS-SECTIONS-2006\SECTIONS-4TOM.DWG

SUMMARY OF GLOBAL SLOPE STABILITY ANALYSIS

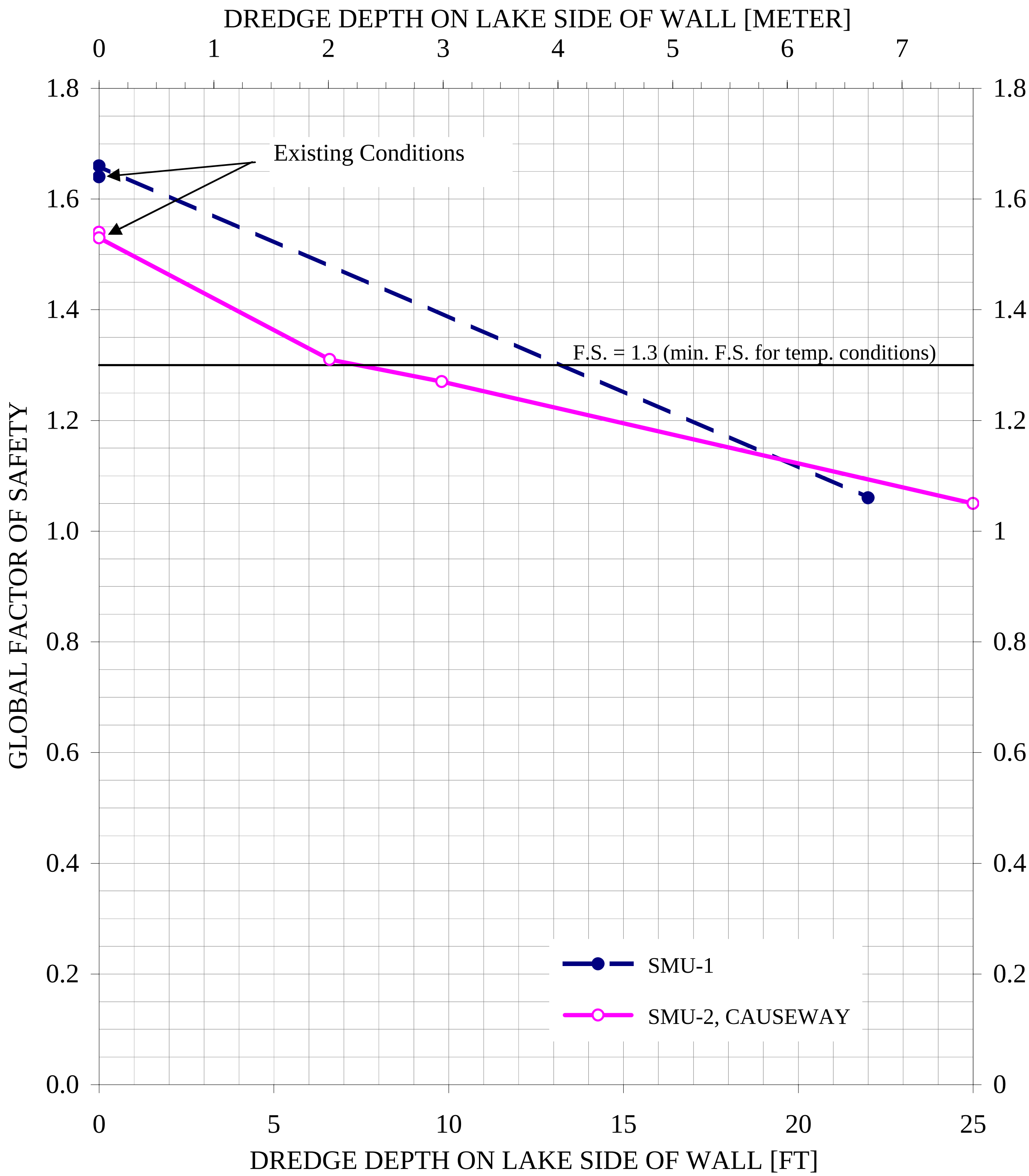
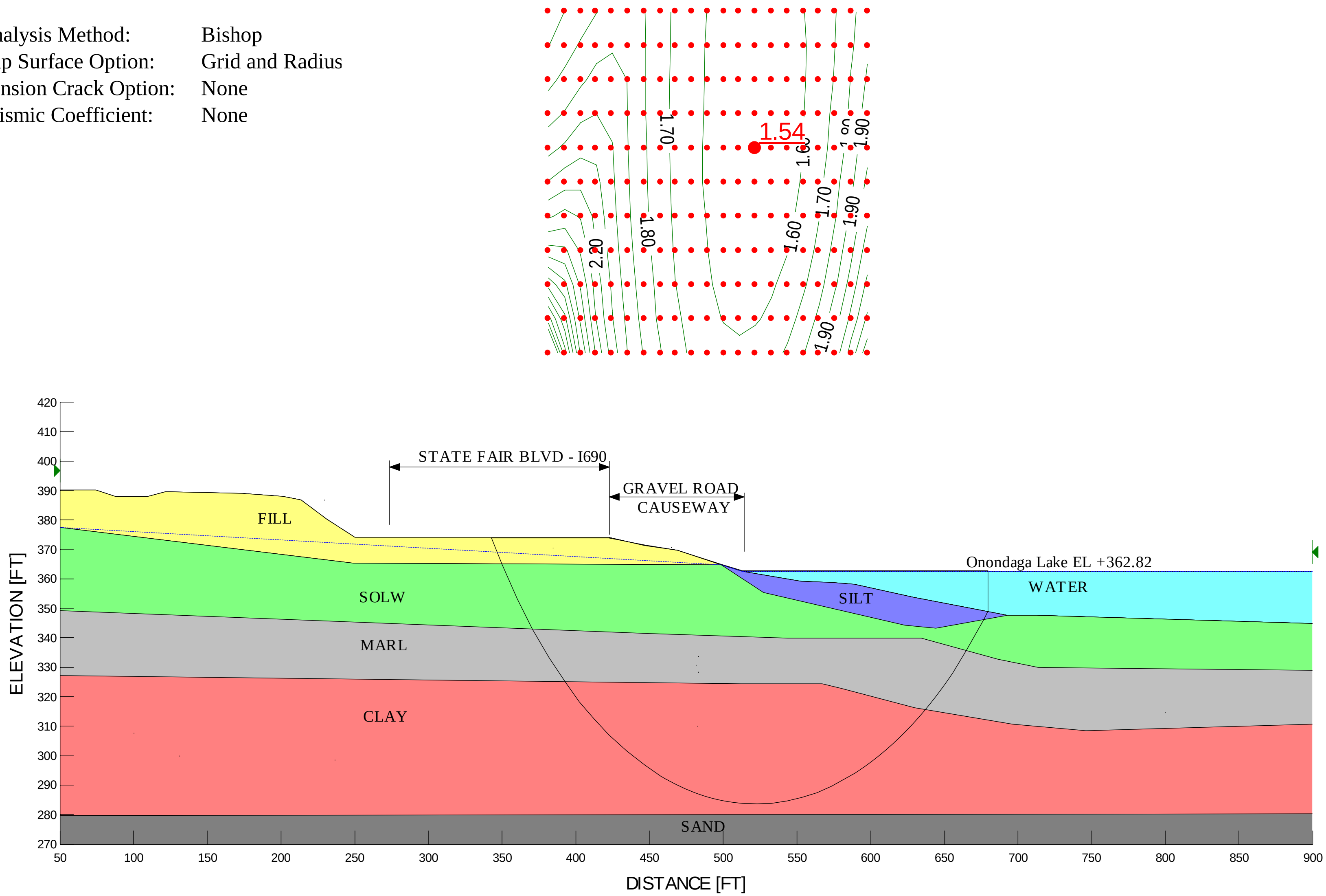


FIGURE 5

APPENDIX A

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	FILL	Mohr-Coulomb	105	200	20
4	SILT	Mohr-Coulomb	105	200	20
5	SOLW	Mohr-Coulomb	110	100	25
6	MARL	Undrained	105	450	0
7	CLAY	Undrained	117	400	0
8	SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

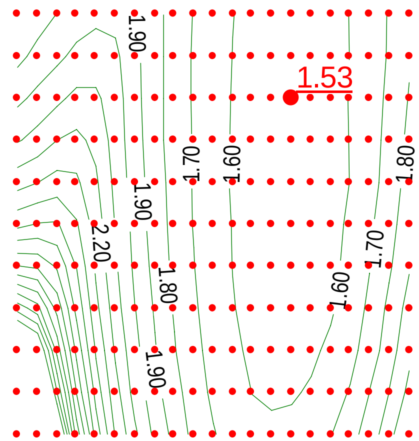
SYRACUSE NY

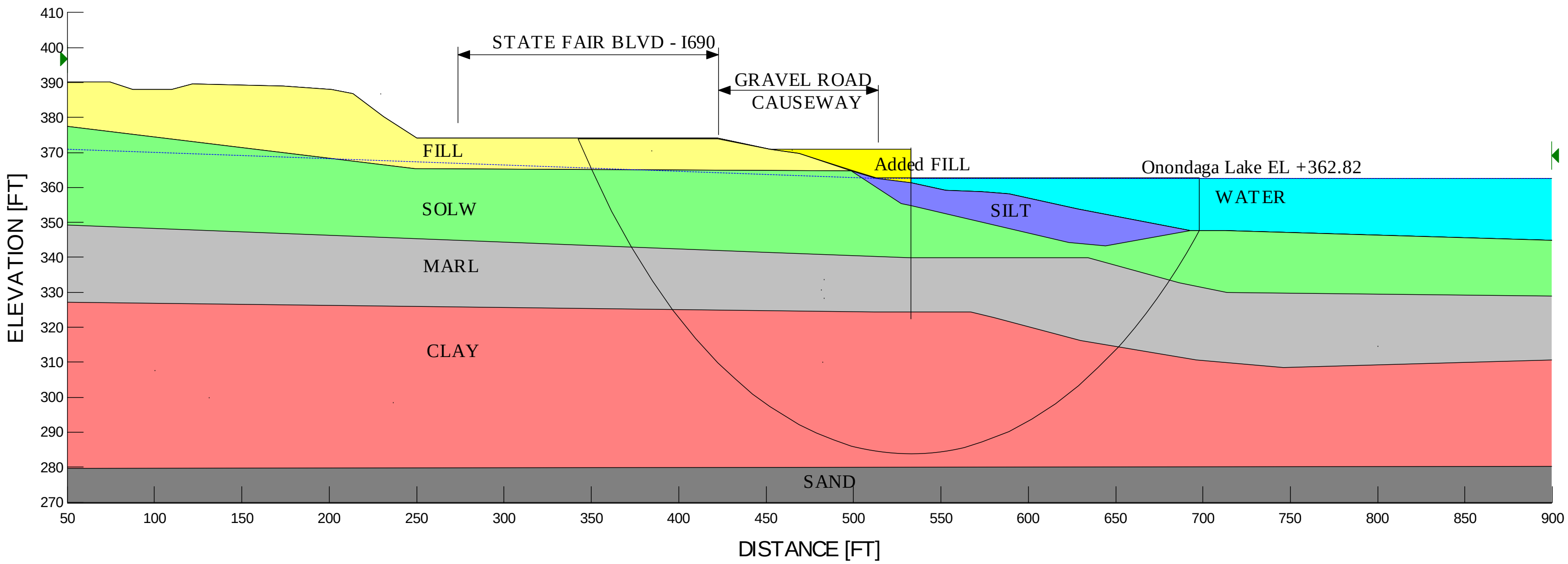
MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: NMA	DATE: 08-08-06	FILE No.
N/A	CH'KD BY: DRG	DATE: 08-08-06	9801
CAUSEWAY EXISTING CONDITIONS			CASE A-1

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None





Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	FILL	Mohr-Coulomb	105	200	20
4	SILT	Mohr-Coulomb	105	200	20
5	SOLW	Mohr-Coulomb	110	100	25
6	MARL	Undrained	105	450	0
7	CLAY	Undrained	117	400	0
8	SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

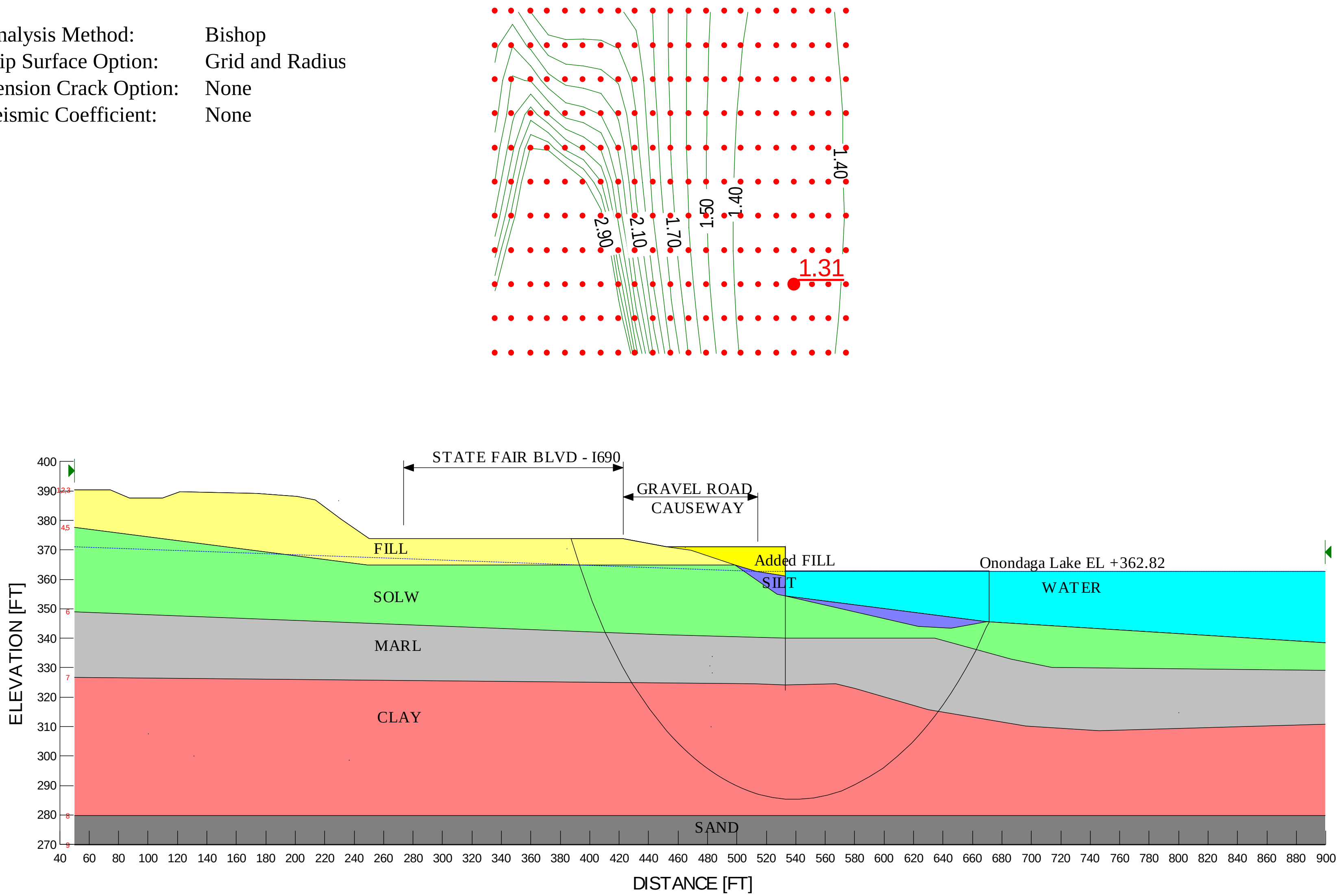
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: NMA	DATE: 08-08-06	FILE No.
N/A	CH'KD BY: DRG	DATE: 08-08-06	9801
CAUSEWAY FILL TO EL. +371			CASE A-2

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	FILL	Mohr-Coulomb	105	200	20
4	SILT	Mohr-Coulomb	105	200	20
5	SOLW	Mohr-Coulomb	110	100	25
6	MARL	Undrained	105	450	0
7	CLAY	Undrained	117	400	0
8	SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

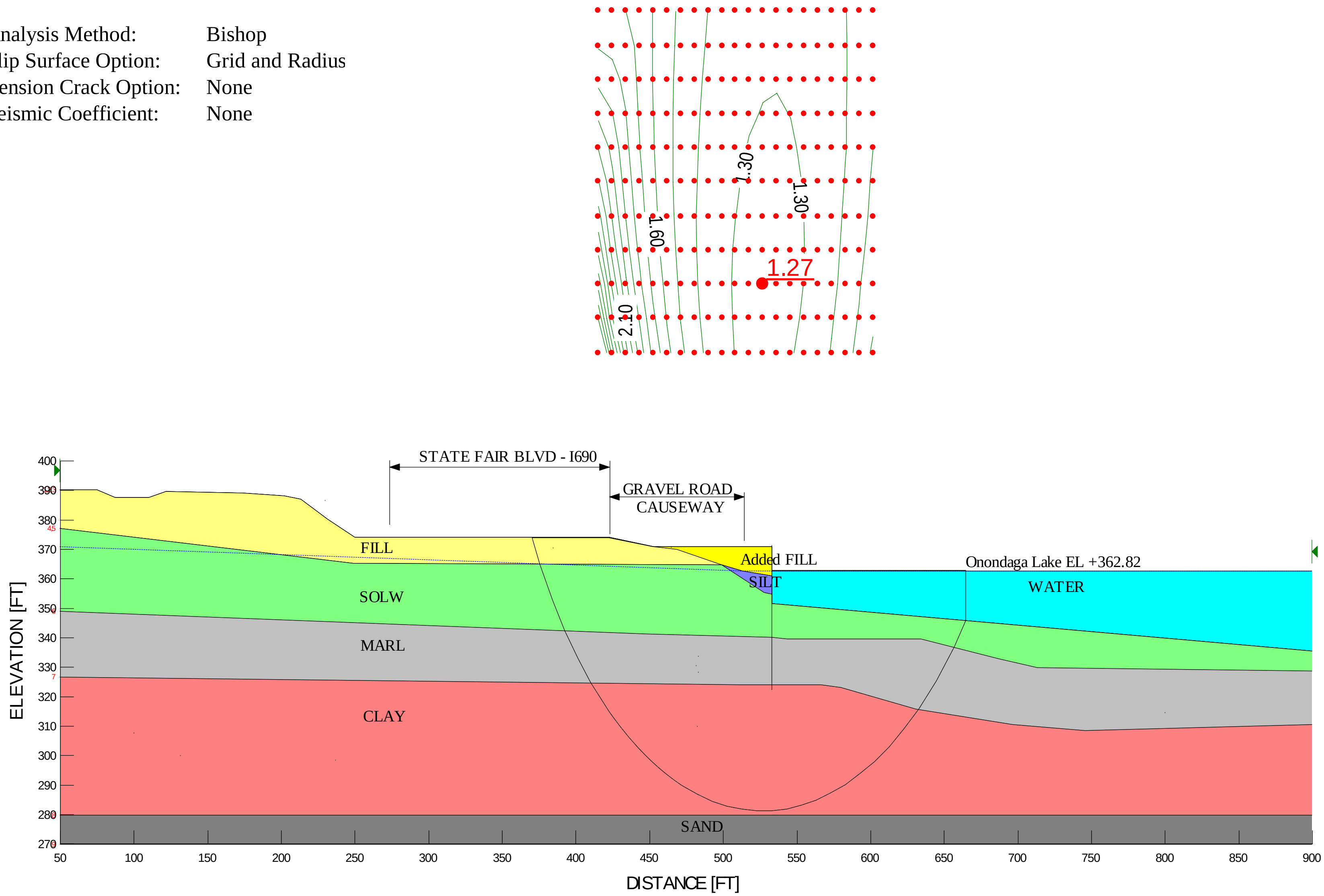
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: NMA	DATE: 08-08-06	FILE No.
N/A	CH'KD BY: DRG	DATE: 08-08-06	9801
CAUSEWAY DREDGE 2 METERS			CASE A-3

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	FILL	Mohr-Coulomb	105	200	20
4	SILT	Mohr-Coulomb	105	200	20
5	SOLW	Mohr-Coulomb	110	100	25
6	MARL	Undrained	105	450	0
7	CLAY	Undrained	117	400	0
8	SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

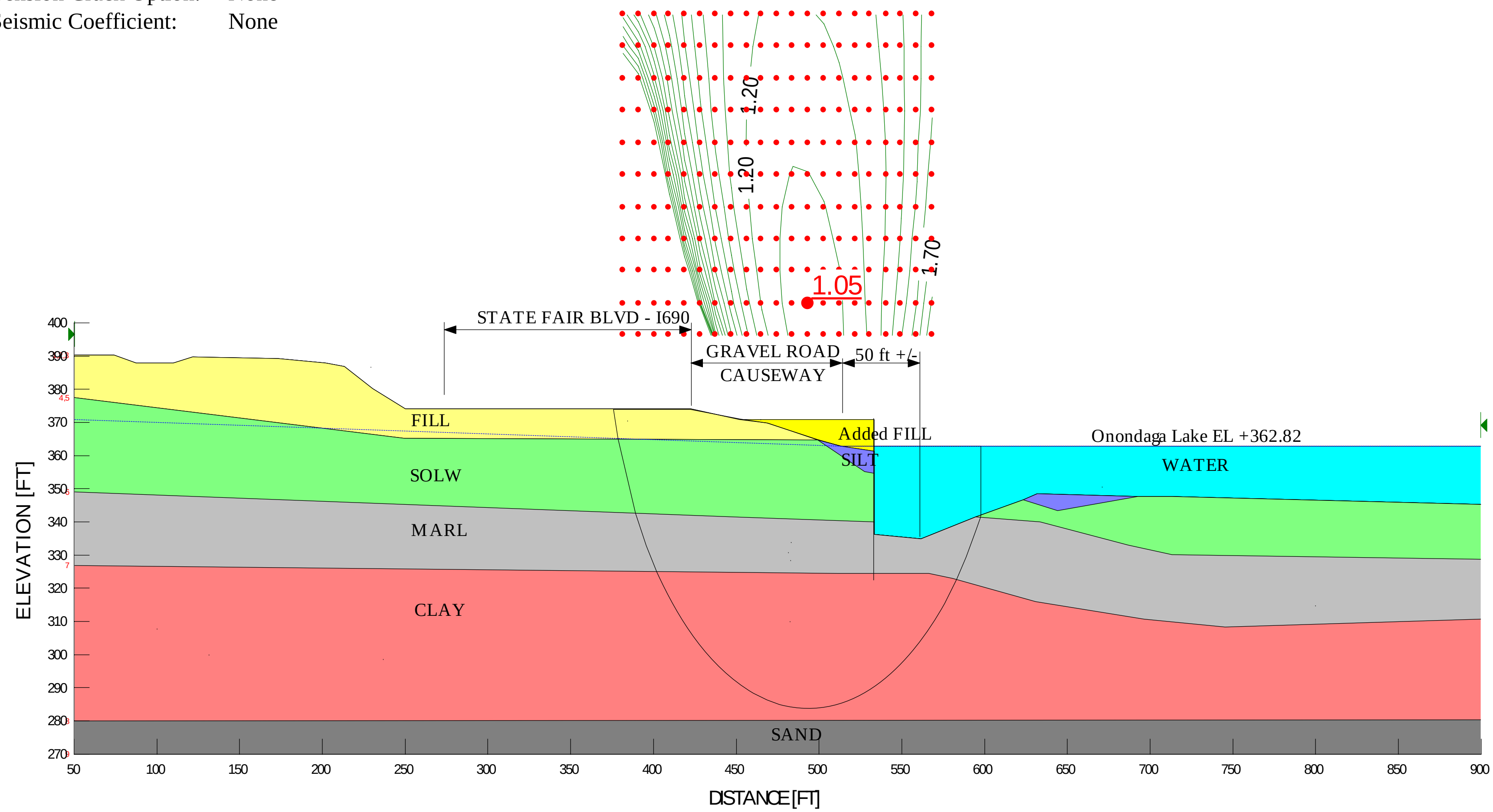
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: NMA	DATE: 08-08-06	FILE No.
N/A	CH'KD BY: DRG	DATE: 08-08-06	9801
CAUSEWAY DREDGE 3 METERS			CASE A-4

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	FILL	Mohr-Coulomb	105	200	20
4	SILT	Mohr-Coulomb	105	200	20
5	SOLW	Mohr-Coulomb	110	100	25
6	MARL	Undrained	105	450	0
7	CLAY	Undrained	117	400	0
8	SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

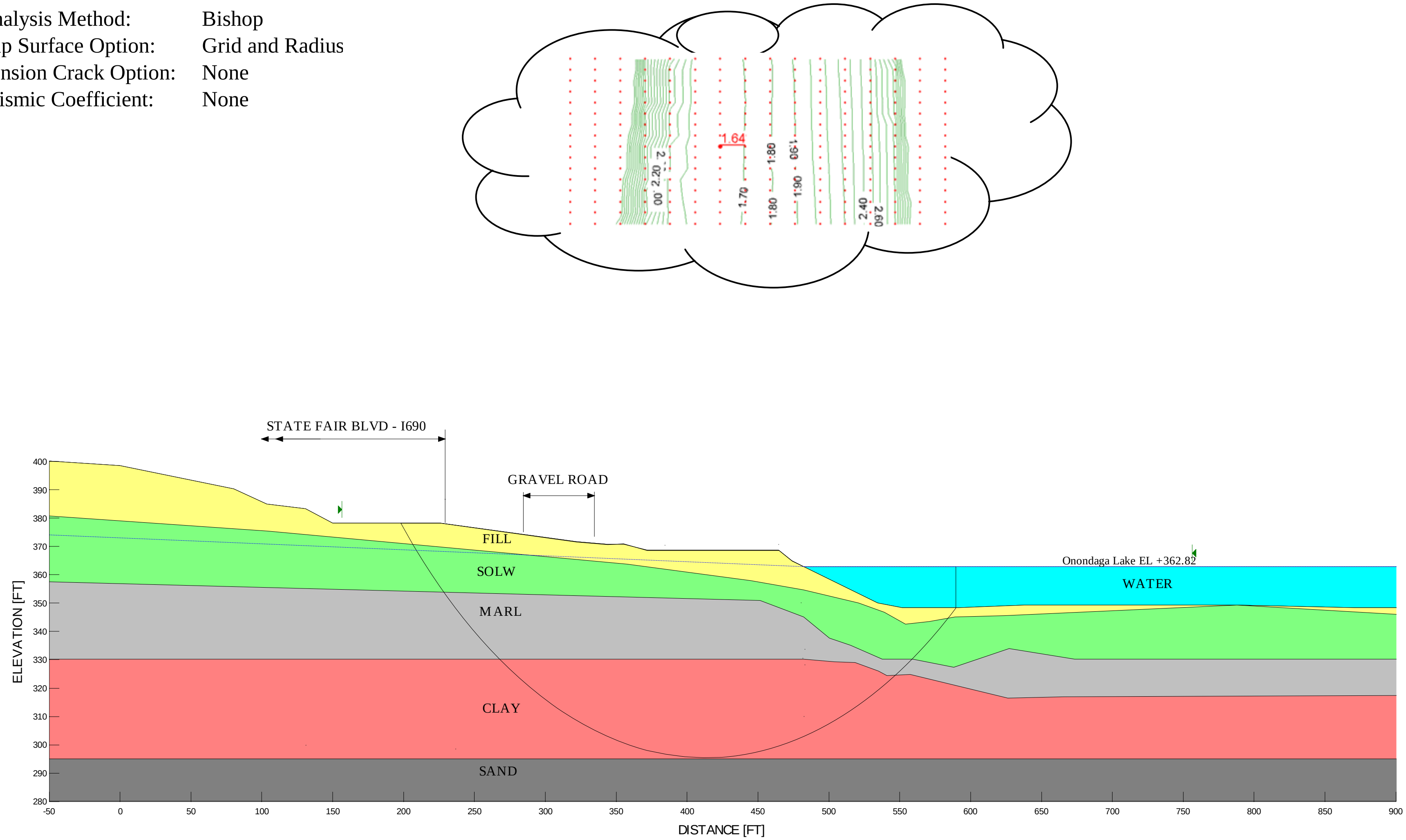
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: NMA	DATE: 08-08-06	FILE No.
N/A	CH'KD BY: DRG	DATE: 08-08-06	9801
	CAUSEWAY DREDGE 7.5 METERS		CASE A-5

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	FILL	Mohr-Coulomb	105	200	20
4	SILT	Mohr-Coulomb	105	200	20
5	SOLW	Mohr-Coulomb	110	100	25
6	MARL	Undrained	105	450	0
7	CLAY	Undrained	117	400	0
8	SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

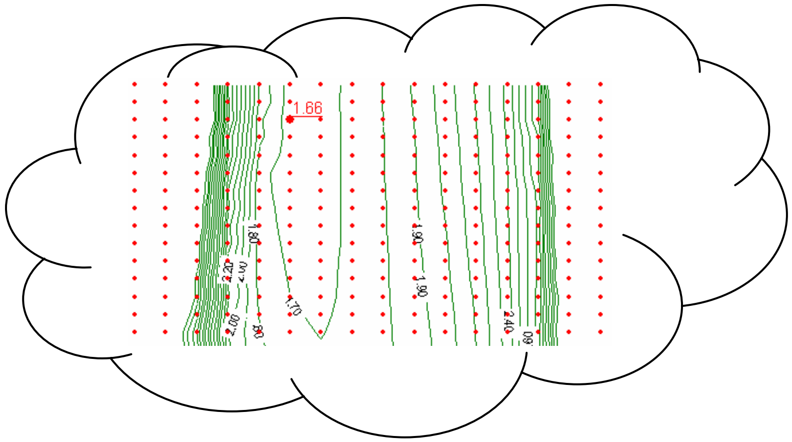
SYRACUSE NY

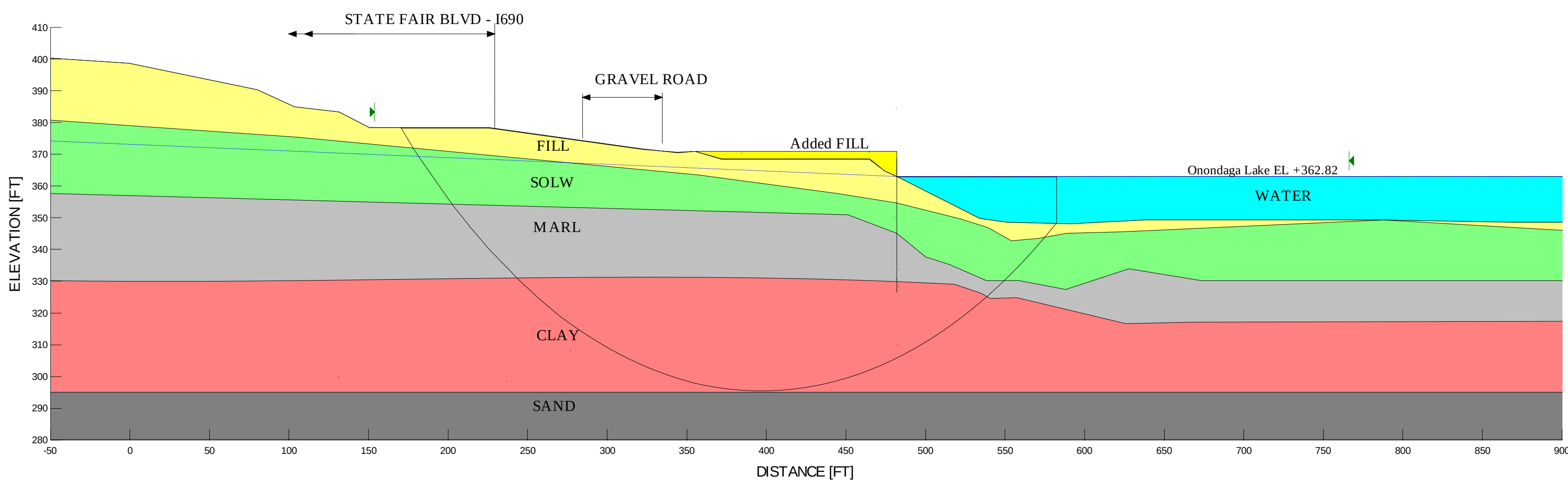
MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: NMA	DATE: 08-08-06	FILE No.
N/A	CH'KD BY: DRG	DATE: 08-08-06	9801
SMU-1 EXISTING CONDITIONS			CASE B-1

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None





Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	FILL	Mohr-Coulomb	105	200	20
4	SILT	Mohr-Coulomb	105	200	20
5	SOLW	Mohr-Coulomb	110	100	25
6	MARL	Undrained	105	450	0
7	CLAY	Undrained	117	400	0
8	SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

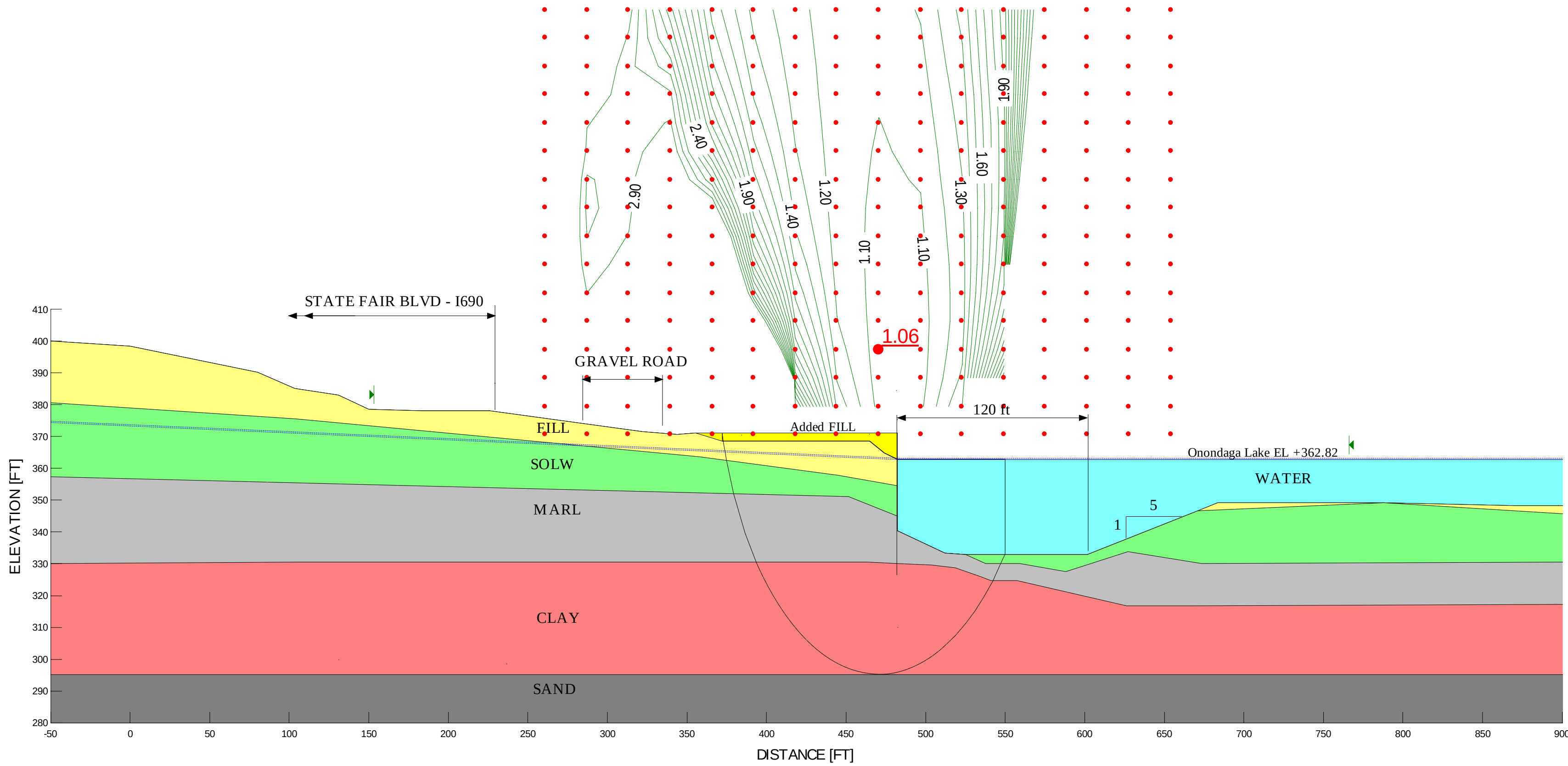
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: NMA	DATE: 08-08-06	FILE No.
N/A	CH'KD BY: DRG	DATE: 08-08-06	9801
	SMU-1		CASE
	FILL TO EL. +371		B-2

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	FILL	Mohr-Coulomb	105	200	20
4	SILT	Mohr-Coulomb	105	200	20
5	SOLW	Mohr-Coulomb	110	100	25
6	MARL	Undrained	105	450	0
7	CLAY	Undrained	117	400	0
8	SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: NMA	DATE: 08-08-06	FILE No.
N/A	CH'KD BY: DRG	DATE: 08-08-06	9801
SMU-1			CASE
DREDGE 6.7 METERS			B-3

PARSONS

290 Elwood Davis Road, Suite 312 • Liverpool, New York 13088 • (315) 451-9560 • Fax (315) 451-9570 • www.parsons.com

MEMORANDUM

October 9, 2007

To: New York State Department of Environmental Conservation (NYSDEC)

From: Parsons

Subject: Honeywell Willis/Semet IRM
Parsons Project 443850 - Willis/Semet IRM
Extension Area Stability Evaluation

1.0 INTRODUCTION

This memo presents the results of the stability evaluation prepared on behalf of Honeywell by Parsons and Mueser Rutledge Consulting Engineers (MRCE) for the proposed extension area of the Willis portion of the Willis/Semet IRM barrier wall. This evaluation was prepared, at the request of NYSDEC, as a supplement to the stability analysis prepared in support of the Explanation of Significant Differences (ESD) for the Onondaga Lake Consent Decree.

This memo is presented in five sections and three attachments.

1. Introduction
2. Background
3. Stability Evaluation
4. Conclusion
5. References

Attachment A	Global Stability Analysis
Attachment B	Figure 1 – Proposed Barrier Wall Alignment
Attachment C	Boring Logs

2.0 BACKGROUND

As presented in the ESD (Appendix B - Onondaga Lake Consent Decree), the stability of the Willis portion of the Willis/Semet IRM barrier wall and adjacent upland areas is critical because of the close proximity of the barrier wall to several active utilities and I-690. In support of the ESD, a stability evaluation was prepared to determine what, if any, impacts could result from dredging to a sufficient depth adjacent to the barrier wall to remove the non-aqueous phase liquid (NAPL) present in the SMU 1 and SMU 2 areas, as required by the Record of Decision. The results of this stability evaluation indicated that the barrier wall and the adjacent upland area would be potentially unstable and could collapse during dredging (Parsons, 2006). The only reliable way to achieve a stable barrier wall would be to install the barrier wall through the clay layer present beneath the NAPL. Installation of the barrier wall through the clay layer, however, could provide a pathway for NAPL to migrate into the deeper zones. Due to the risk of creating such a pathway, it was determined that installation of a barrier wall through the clay layer was not the preferred option. The ESD recommended that the most appropriate remedy to address NAPL in this area was to locate the barrier wall off-shore immediately beyond the furthest extent of pooled NAPL within the lake.

In the spring of 2007, Honeywell completed pre-design investigation borings along the Willis portion of the barrier wall alignment. During this effort, additional NAPL was identified in an area east of the alignment adjacent to the shoreline in SMU 1. The scope of the investigation was expanded to fully delineate the extent of pooled NAPL. The results of the investigation indicate the presence of NAPL in an additional area of approximately 0.4 acres (Figure 1 – Attachment B).

3.0 STABILITY EVALUATION

Due to the fact that the pooled NAPL extends further into SMU 1 than originally anticipated, and the additional area is significantly shallower (average depth of less than 4 feet) than the other areas encompassed by the IRM, the previously completed stability evaluation does not accurately represent the actual conditions in this area. Therefore, a supplemental evaluation was prepared by Honeywell to determine if a potentially unstable condition would also exist in this additional area if the barrier wall was constructed on-shore and dredging was conducted to remove the NAPL in its entirety. (For the purposes of this evaluation, a 28-foot deep dredge was assumed for excavation of the in-lake NAPL. This is based on the average depth of observed NAPL within the Marl stratum during the 2007 investigation, which was completed to define the areal extent of NAPL in order to establish the required barrier wall alignment, not to define the maximum depth of NAPL. The 28 foot dredge depth includes a one-foot over dredge allowance.) This supplemental stability evaluation is provided in Attachment A of this memorandum. Consistent with the previous stability evaluation (MRCE, 2006), the results of this evaluation indicate that the barrier wall would potentially be unstable during dredging, which could result in a slope failure that impacts portions of the adjacent shoreline area, nearby utilities (e.g. existing force main from the lakeshore pump station to the Willis Ave. WWTP, proposed Willis-Semet GW collection trench piping and controls, proposed DNAPL collection system wells, piping and controls, and the existing lakeshore pump station access road). As stated in the ESD, if this type of failure occurs, the affected barrier wall components, utilities, and upland soil would slide toward the lake. Increasing the strength of the sheet piling will not reduce the risk of failure because the failure surface would extend below the bottom of the barrier wall.

4.0 CONCLUSION

Based upon the results of the stability analysis (Attachment A), the on-shore barrier wall option is not technically feasible. The recommended remedy is to extend the off-shore barrier wall alignment beyond the furthest extent of NAPL, as indicated in Figure 1 (Attachment B). This barrier wall alignment will eliminate the need for dredging to address pooled NAPL in

SMU 1 while addressing the geotechnical stability concerns and being protective of public health and the environment.

5.0 REFERENCES

MRCE, 2006. Mueser Rutledge Consulting Engineers, New York, NY: Prepared for Mr. John McAuliffe, Honeywell. Letter dated, August 8, 2006.

Parsons, 2006. *Onondaga Lake: Technical Support Document for Explanation of Significant Differences.* August 2006

ATTACHMENT A

GLOBAL STABILITY ANALYSIS

Mueser Rutledge
Consulting Engineers
14 Penn Plaza • 225 W. 34th Street • New York, NY 10122
Tel: (917) 339-9300 • Fax: (917) 339-9400
www.mrce.com

October 2, 2007

Mr. Michael B. Broschart, Senior Engineer
Parsons
290 Elwood Davis Road, Suite 312
Liverpool, NY 13088

Re: Global Stability Analysis
East End of Willis Site
Syracuse, New York
MRCE File 9801

Dear Mr. Broschart:

At your request, we document herein the results of our global stability analysis of the east end of the Willis site. The location evaluated is east of the previous station evaluated for global stability reflecting the proposed continuation of the mandated lake front hydraulic barrier. The previous global stability analysis performed by Mueser Rutledge Consulting Engineers (MRCE) for the potential deep dredge condition to the west, was presented as Attachment B of the Technical Support Document for Explanation of Significant Differences (Parsons, 2006).

The purpose of the current stability evaluation is to determine whether an in-lake alignment of the hydraulic barrier is needed to confine deep DNAPL at the east end of the Willis site, or whether deep dredging is feasible with a shoreline barrier alignment at the location evaluated.

The geologic profile used in our stability analysis, designated Section B-B', is attached as Figure 2 and shown in plan on Figure 1. The geologic profile, prepared by Parsons, is based on the subsurface information obtained from the recent 2007 borings. Geotechnical parameters used in the stability analysis included both the generalized "site wide" parameters which were used in our previous in-lake stability analyses, as well as those developed in recent laboratory strength testing of undisturbed samples taken outboard of the shoreline in 2007. Analysis using generalized "site wide" parameters was performed for direct comparison with previous stability analysis on cases to the west, and to provide context for those cases where actual 2007 laboratory test data was used. The current laboratory test results are believed to be more applicable to the east end location analyzed, at least for that portion of the slip surfaces that are outboard of the existing shoreline.

EXHIBITS

2007 GEOTECHNICAL LABORATORY TESTING

That 2007 geotechnical laboratory test program consisted of performing compressive strength testing, one-dimensional consolidation testing, and index testing on soils recovered from the 2007 boring investigation. That field investigation was performed by Parsons in April 2007 and was conducted at the east end of the Willis site.

The 2007 laboratory test program included undisturbed soil samples for both unconsolidated-undrained (UU) triaxial strength and consolidated-undrained (CU) triaxial strength performed variously on undisturbed soil samples of the Solvay Waste (Stratum F2), Marl (Stratum M1) and Silt and Clay (Stratum M2). Laboratory data sheets are presented in Appendix B. The strength test results are graphically summarized on Figures 3 through 5. All geotechnical testing was performed by Geotesting Express under subcontract to Parsons.

GLOBAL STABILITY ANALYSIS

The stability analysis was performed as previously, using Slope/W 2004 software published by Geo-Slope. The analysis used was the Bishop method with two-dimensional conditions, also as previously performed. Two cases were analyzed for global stability, designated the "shoreline case" which evaluates a hydraulic barrier installed at the shoreline, and the "in-lake case" which evaluates a hydraulic barrier set offshore. Both these cases used soil profile B-B, as described below. The in-lake case also includes a "sensitivity" analysis to determine the effect of various dredge depths on global stability. Computer generated stability output is attached as Appendix A.

The generalized "site-wide" soil strength parameters were first used to perform the stability analysis, to provide a general understanding of stability issues at the east end of the Willis site and for direct comparison with previous stability analysis previously performed on cases further to the west. Two selected cases were then analyzed using parameters using strength derived from an analysis of the 2007 laboratory data, as summarized on Figures 3 through 5.

The change in shear strength from the previous analysis parameters to the values derived from the 2007 data, local to the offshore deposits at the east end of the Willis site, are as follows:

Solvay Waste (F2)	No change
Marl (M1)	2006 = 450 psf - 2007 = 240 psf
Silt and Clay (M2)	2006 = 400 psf - 2007 = 550 psf

Stratum M2 is highly sensitive and easily disturbed by sampling and testing. Based on the results of unconsolidated, undrained (UU) triaxial testing, the UU samples are disturbed and yield unreasonably low undrained shear strengths. The samples taken for consolidated, undrained (CU) triaxial testing are disturbed as well, however during consolidation the samples lose moisture, yielding unrepresentatively high shear strengths. Therefore, based on published, plasticity-based correlations, we have elected to use a C/P' ratio of approximately 0.25 within the depth range of the failure plane. Using this C/P' ratio and assuming the stratum is normally consolidated, a strength of 550 psf is derived. This strength corresponds to the low end of the CU triaxial test data.

Because all samples tested in 2007 were sampled offshore, it is unclear whether the measured strengths are directly applicable to the soils inboard of the shoreline.

Shoreline Case 1

Shoreline Case 1 (SH-1) was evaluated with the permanent hydraulic barrier sheet pile alignment set at the existing shoreline. This case assumes placement of new fill inboard of the barrier to raise grades to Elev. +365. For the purposes of this evaluation, a 28-foot deep dredge (Elev. +332) was assumed for excavation of the in-lake NAPL. This is based on the average depth of observed NAPL within the Marl stratum during the 2006 and 2007 investigations, however, maximum NAPL depth was not defined. The purpose of the 2007 investigation was to define the areal extent of NAPL in order to define the required barrier wall alignment, not the maximum depth of NAPL The 28 foot dredge depth includes a one-foot over dredge allowance. A summary of the depth of observed NAPL within the Marl stratum is presented in a table prepared by Parsons, attached as Table 2. On that basis, the dredged profile was assumed to be 28 feet deep at the shoreline hydraulic barrier, then sloped up on a 5H:1V slope to the point of where the in-lake barrier alignment was designated, then assuming a 2 meter dredge depth.

The computer-generated output for the shoreline case is attached in Appendix A as Figures SH-1 and SH-1A, which provides the input parameters, geometry and stability analysis result. The results for this case using the 2006 generalized "site wide" strength properties is presented as Figure SH-1, with the computer run using the 2007 local laboratory strength properties presented as Figure SH-1A.

In-Lake Cases

The in-lake alignment cases, (designated "IL" series) were evaluated, assuming a hydraulic barrier alignment 50 feet outboard from the existing shoreline. A final inboard fill elevation of +365 with dredging outboard of the wall was assumed. Various dredge depths were evaluated for effect on stability, as tabulated below. All cases were performed using the 2006 generalized "site wide" strength properties. The deepest dredge case (IL-5) was repeated using the 2007 local laboratory strength properties, which appears as Case IL-5A.

STABILITY RESULTS

The results of stability analyses are presented in Table 1 below. The cases using the 2007 local strength properties were given an "A" suffix, and appear in bold.

Table 1 – Soil Profile B- B- Analysis Cases and Computed Factors of Safety

CASE ID	CASE CONDITION	DREDGE ELEVATION	COMPUTED FACTOR OF SAFETY
SH-1	Barrier at shoreline, fill inboard to Elev. +365.	+332 (28' deep dredge)	1.08
SH-1A	**Barrier at shoreline, fill inboard to Elev. +365. (2007 lab strengths)**	**+332 (28' deep dredge)**	**1.22**
IL-1	Barrier 50 foot outboard of shore-line, fill inboard to Elev. +365.	+354 (2 meter dredge)	2.01
IL-2	Barrier 50 foot outboard of shoreline, fill inboard to Elev. +365.	+350.7 (3 meter dredge)	1.83
IL-3	Barrier 50 foot outboard of shoreline, fill inboard to Elev. +365.	+347.4 (4 meter dredge)	1.68
IL-4	Barrier 50 foot outboard of shoreline, fill inboard to Elev. +365.	+344.2 (5 meter dredge)	1.55
IL-5	Barrier 50 foot outboard of shoreline, fill inboard to Elev. +365.	+337.6 (7 meter dredge)	1.35
IL-5A	**Barrier 50 foot outboard of shoreline, fill inboard to Elev. +365. (2007 lab strengths)**	**+337.6 (7 meter dredge)**	**1.40**

SUMMARY

The minimum allowable Factor of Safety (FS) for stability acceptable to the Federal Highway Administration, as published in their technical literature, is 1.3 for temporary conditions and 1.5 for the permanent conditions. These criteria are reasonable and widely used. For both cases the temporary condition applies because the mudline would be rebuilt after dredging with imported granular fill, as part of the future cap construction.

The results show that a 28-foot deep, near-shoreline dredge depth will result in an unacceptable factor of safety,(SH-1 and SH-1A) using either the generalized "site wide" strength properties, or the localized 2007 laboratory strength properties. The results also show that for the in-lake cases, a dredge depth of up to 7 meters is acceptable with respect to global stability. We therefore recommend continuing the in-lake alignment of the hydraulic barrier.

Please contact us if you have any questions regarding our analysis.

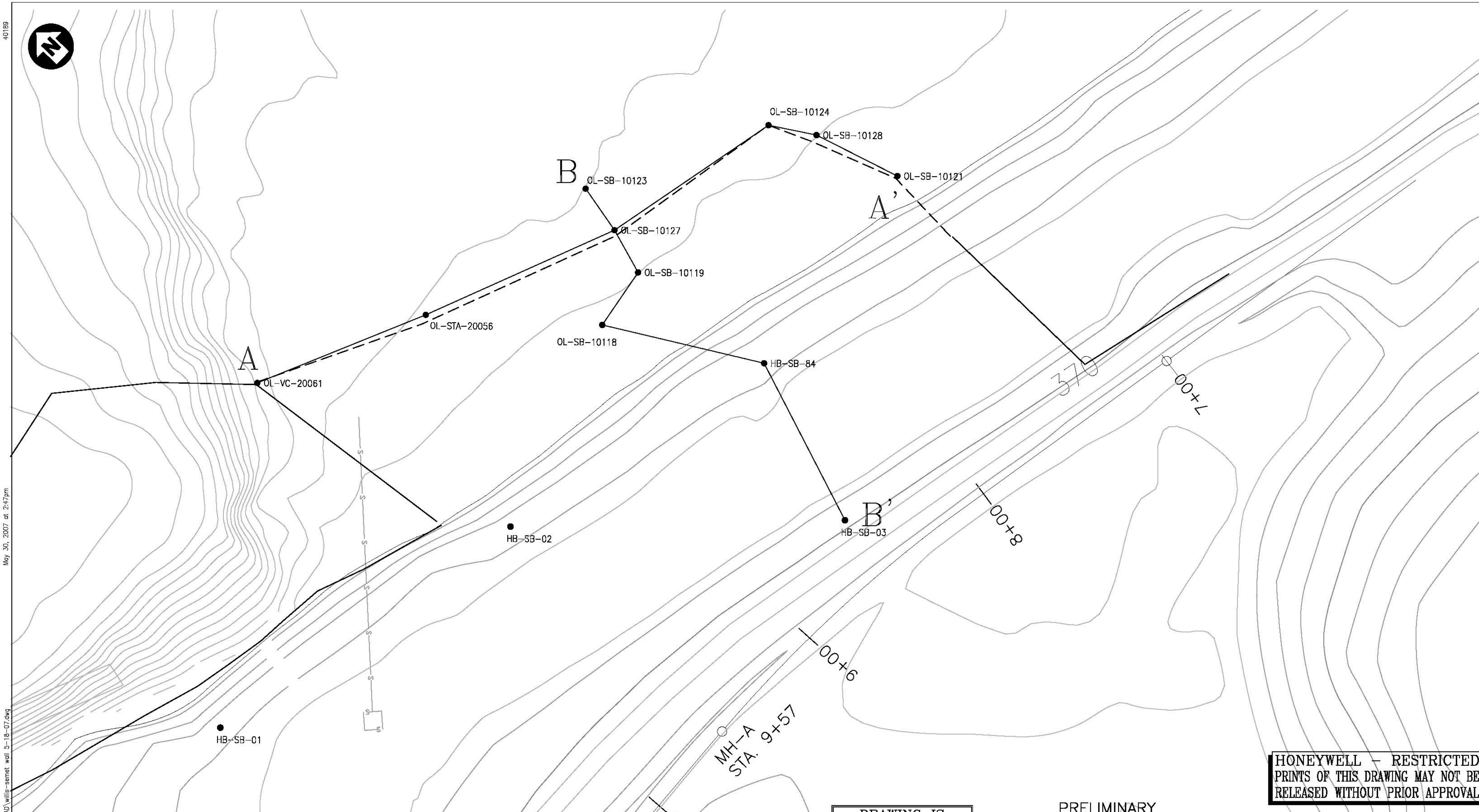
Very truly yours,

MUESER RUTLEDGE CONSULTING ENGINEERS

By: D. R. Good
David R. Good

Attachments
JR:DRG:chs:dredge stability\stability letters

EXHIBITS



HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

DRAWING IS HALF-SIZE IF PLOTTED 11x17

PRELIMINARY
NOT FOR CONSTRUCTION OR BIDDING

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

NOTICE

THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

EQUIPMENT P.O. B/M NUMBERS:

JOB NO. 742211
CONTRACTOR'S JOB NO.
SCALE: 1"=20'-0"

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

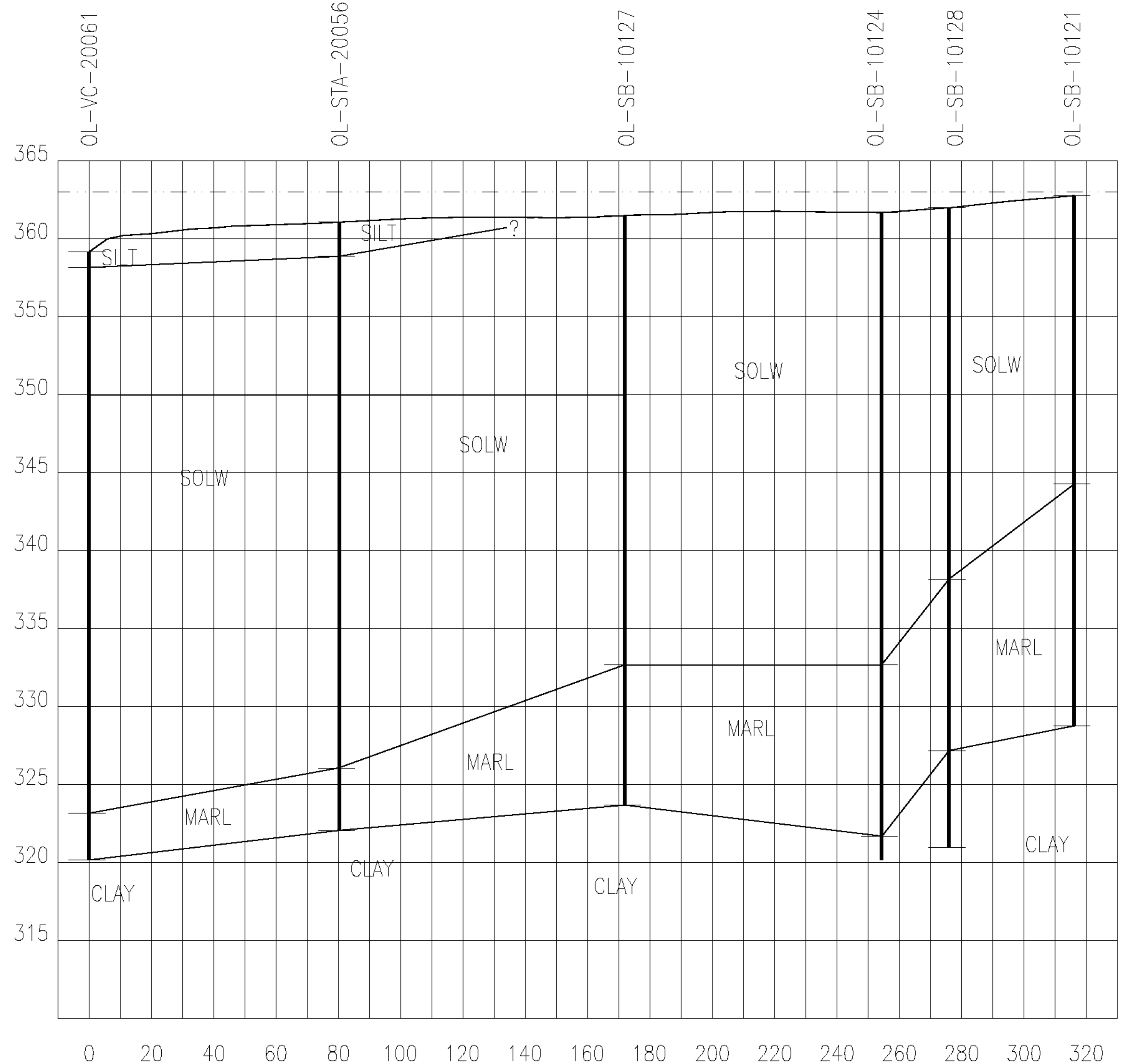
BARRIER WALL – ALIGNMENT PLAN
SECTION LOCATIONS

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

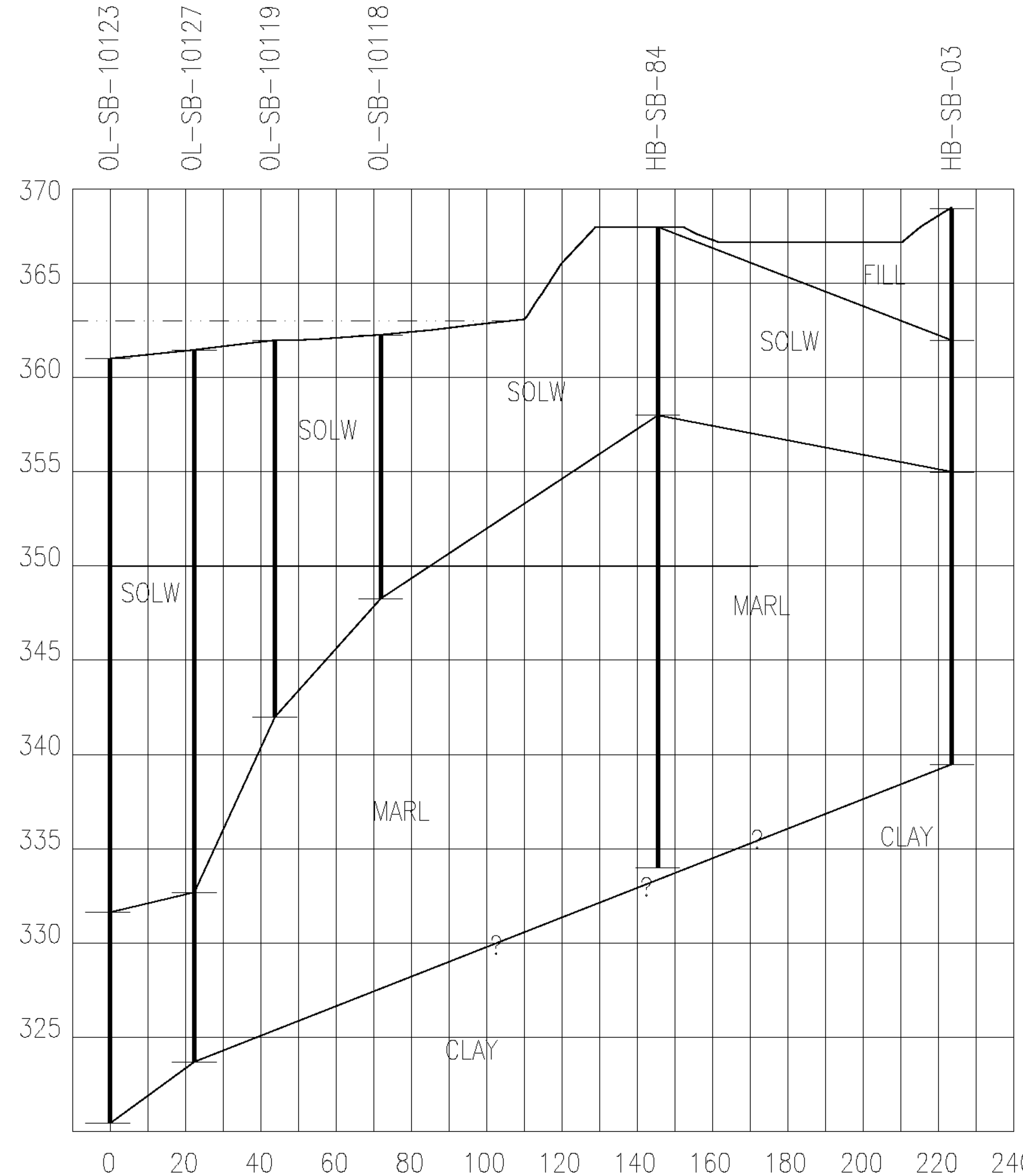
DRAWN	DATE	CHK.	DATE
JR	03/15/06	MBB	03/16/06

LOCATION
FIGURE 1
REV 1

P:\Honeywell -SYR\742211 - Willis-Semet\CAD\willis-semet wall 5-18-07.dwg May 30, 2007 at 2:47pm 40189



SECTION A-A'
SCALE: AS SHOWN



SECTION B-B'
SCALE: AS SHOWN

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

DRAWING IS HALF-SIZE IF PLOTTED 11x17

PRELIMINARY
NOT FOR CONSTRUCTION OR BIDDING

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

NOTICE

THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

EQUIPMENT P.O. B/M NUMBERS:

JOB NO. 742211
CONTRACTOR'S JOB NO.
SCALE: AS SHOWN

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

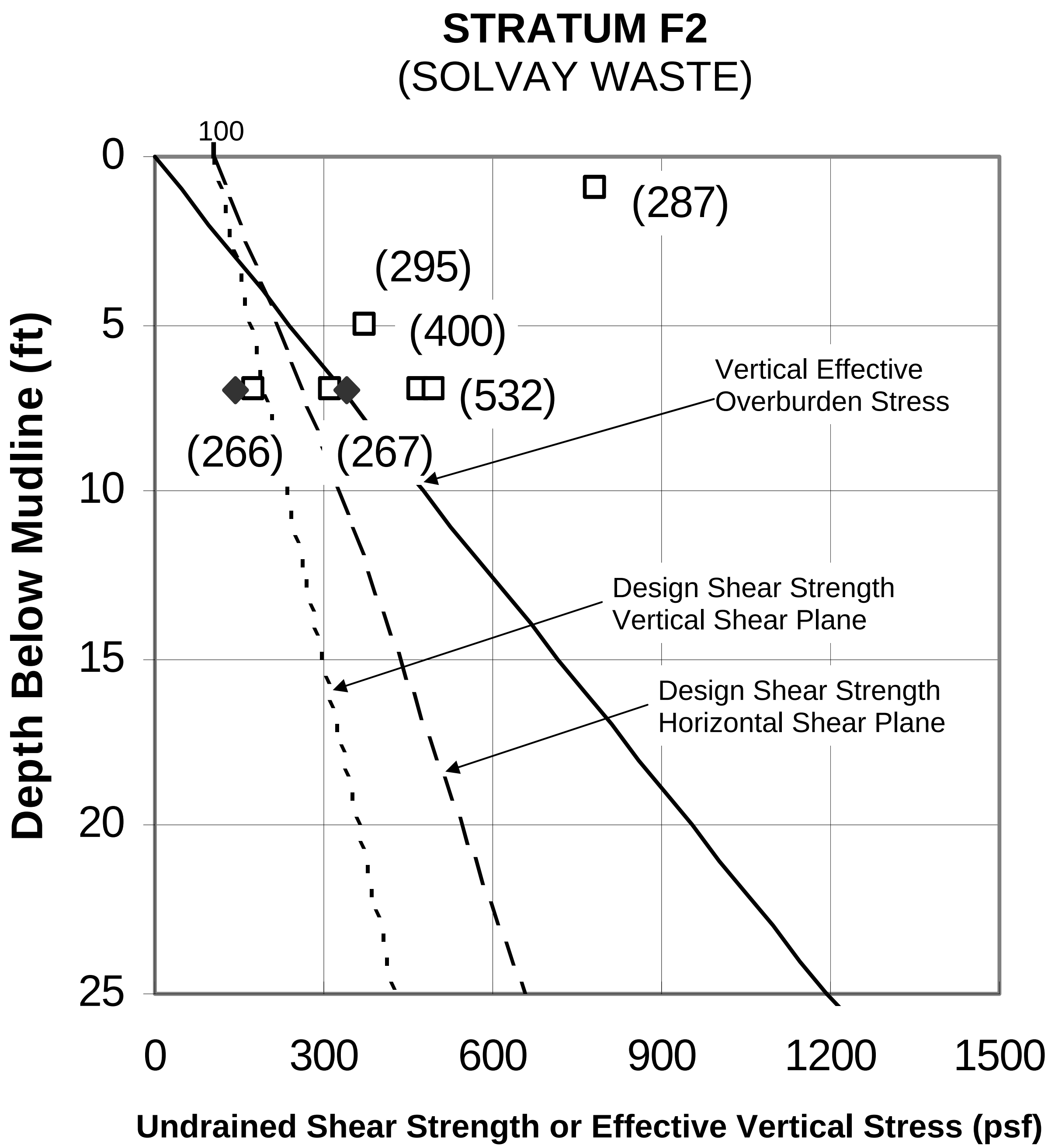
BARRIER WALL – ALIGNMENT PLAN
CROSS SECTIONS A & B

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

JR	05/31/07	MBB	05/31/07
DRAWN	DATE	CHK.	DATE

LOCATION
FIGURE 2
REV 1

40189
May 30, 2007 at 2:37pm
P:\Honeywell -SYR\742211 - Willis-Semet\CAD\willis-semet wall 5-18-07.dwg

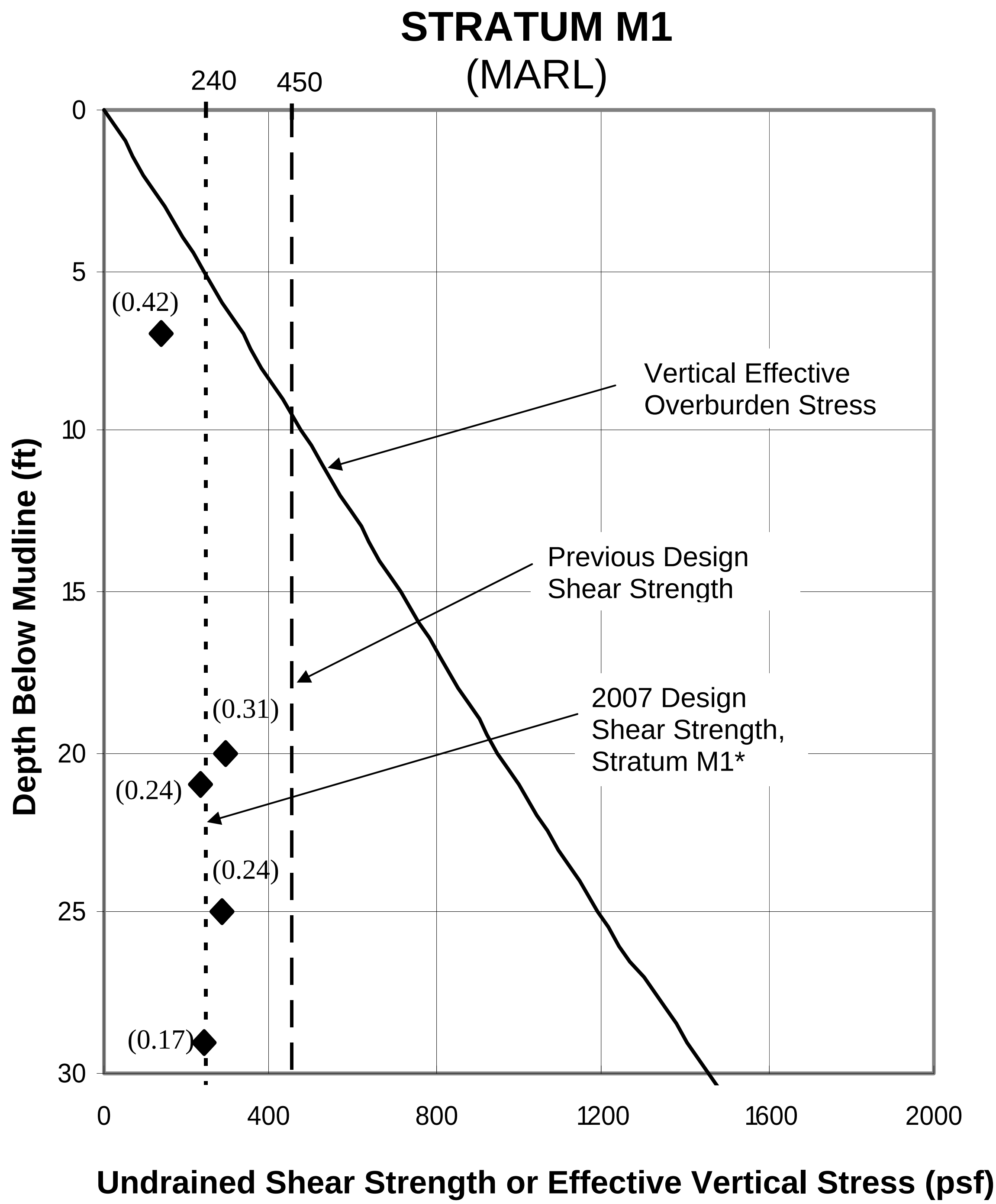


LEGEND

- CU Laboratory Testing Data (Consolidation Pressure, psf)
- UU Laboratory Testing Data
- Vertical Effective Stress
- Design Strength (Horizontal Shear Plane)
- Design Strength (Vertical Shear Plane)

Unconsolidated, Undrained (UU) Laboratory Testing Data provided by Honeywell. Laboratory testing performed by Geotesting Express.

WILLETS / SEMET SITE			
SYRACUSE			NEW YORK
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W 34TH STREET, NEW YORK NY 10122			
SCALE	MADE BY: JR	DATE: 08-07-07	FILE No.
GRAPHIC	CH'KD BY:	DATE:	9801
UNDRAINED STRENGTH F2 STRATUM			FIGURE No. 3



* Design Shear Strength selected based on UU Test data. The selected strength translates to approximately a C/P’ = 0.20.

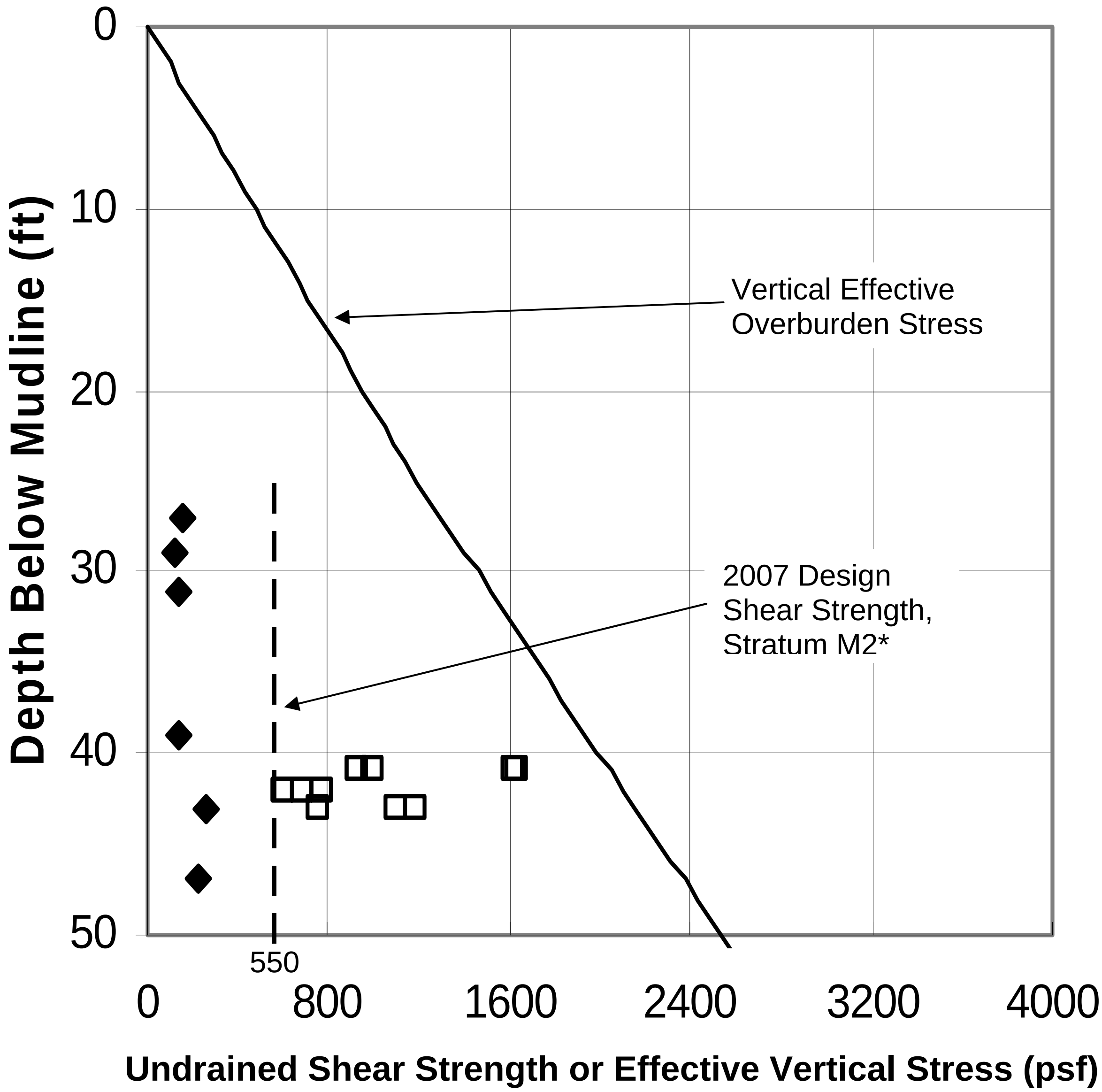
LEGEND

◆ UU Laboratory Testing Data (c/p’ ratio)
Vertical Effective Stress
Design Shear Strength (6-20-07)
Proposed Design Shear Strength

Unconsolidated, Undrained (UU) Laboratory Testing Data provided by Honeywell. Laboratory testing performed by Geotesting Express.

WILLETS / SEMET SITE			
SYRACUSE			NEW YORK
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W 34TH STREET, NEW YORK NY 10122			
SCALE	MADE BY: JR	DATE: 09-07-07	FILE No.
GRAPHIC	CH'KD BY:	DATE:	9801
UNDRAINED STRENGTH M1 STRATUM			FIGURE No. 4

STRATUM M2
(SILT AND CLAY)



* Design Shear Strength selected based on C/P’ = 0.25 at the approximate depth of the failure plane in Stratum M2.

LEGEND

- □ CU Laboratory Testing Data
- ◆ UU Laboratory Testing Data
- —— Effective Vertical Stress
- — — Design Strength, c = 550 psf

Unconsolidated, Undrained (UU) and Consolidated, Undrained (CU) Laboratory Testing Data provided by Honeywell. Laboratory testing performed by Geotesting Express.

WILLETS / SEMET SITE			
SYRACUSE			NEW YORK
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W 34TH STREET, NEW YORK NY 10122			
SCALE	MADE BY: JR	DATE: 09-07-07	FILE No.
GRAPHIC	CH'KD BY:	DATE:	9801
UNDRAINED STRENGTH M2 STRATUM			FIGURE No. 5

Table 2
Observed NAPL Depth in Marl (M1) Stratum

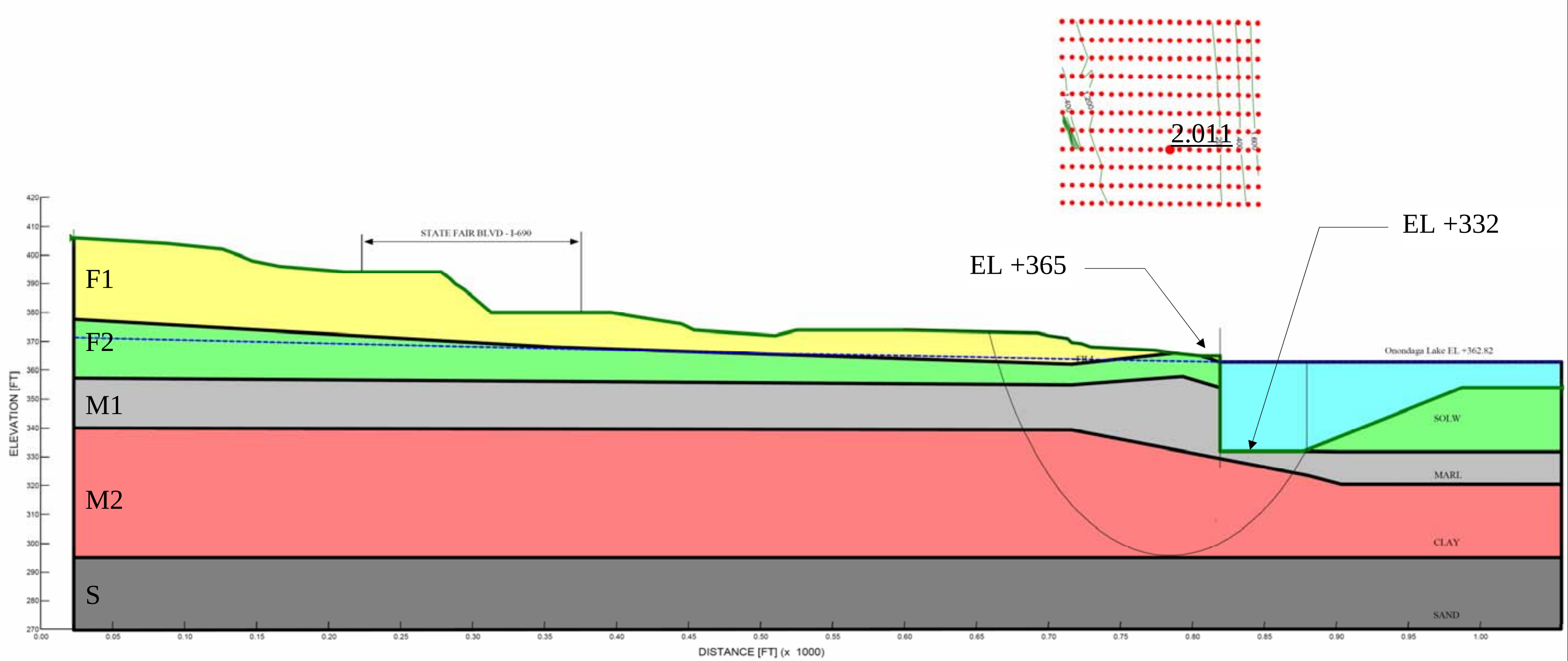
Location ID	Observed NAPL Depth (ft below mudline)	Notes
OL-SB-10116	28.25	
OL-SB-10117	20	End of boring
OL-SB-10118	28	End of boring
OL-SB-10119	30	End of boring
OL-SB-10120	28	
OL-SB-10122	28	End of boring
OL-SB-10126	26	End of boring

Notes:
1. Maximum NAPL depth was not defined
2. Average observed NAPL depth = 26.9 FT

APPENDIX A

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None

DREDGE TO ELEVATION +332 FT



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	F1 - FILL	Mohr-Coulomb	105	200	20
4	F2 - SOLW	Mohr-Coulomb	110	100	25
5	M1 - MARL	Undrained	105	450	0
6	M2 - CLAY	Undrained	117	400	0
7	S - SAND	Mohr-Coulomb	120	0	34

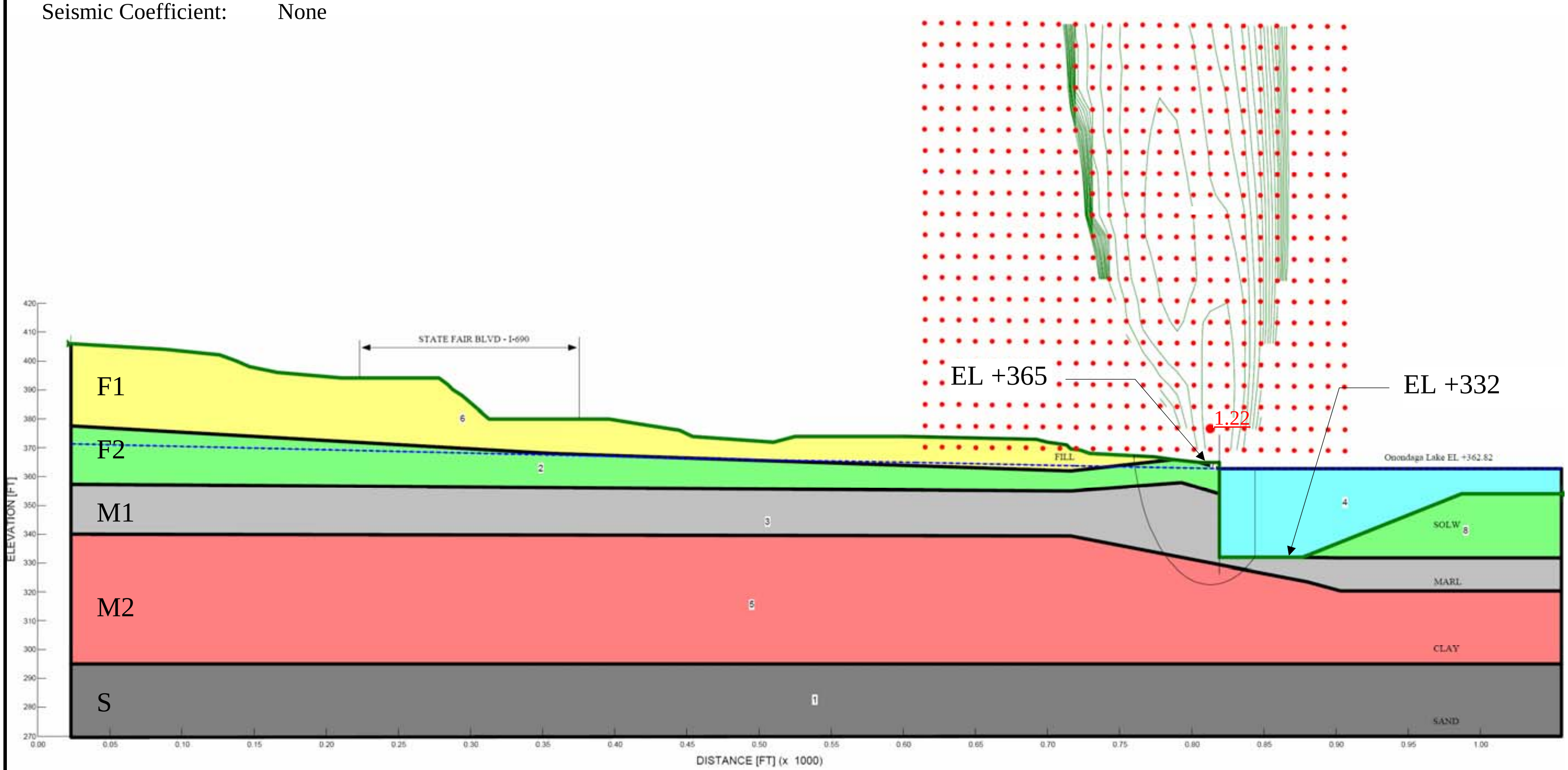
WILLIS / SEMET SITE
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS
225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: JLR	DATE: 06-18-07	FILE No.
N/A	CH'KD BY:	DATE:	9801
REVISED SECTION B DREDGE TO ELEVATION +332 FT			CASE SH - 1

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None

DREDGE TO ELEVATION +332 FT



Revised Analysis includes Soil Strengths based on 2007 Design Shear Strengths

Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	F1 - FILL	Mohr-Coulomb	105	200	20
4	F2 - SOLW	Mohr-Coulomb	110	100	25
5	M1 - MARL	Undrained	105	240	0
6	M2 - CLAY	Undrained	117	550	0
7	S - SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

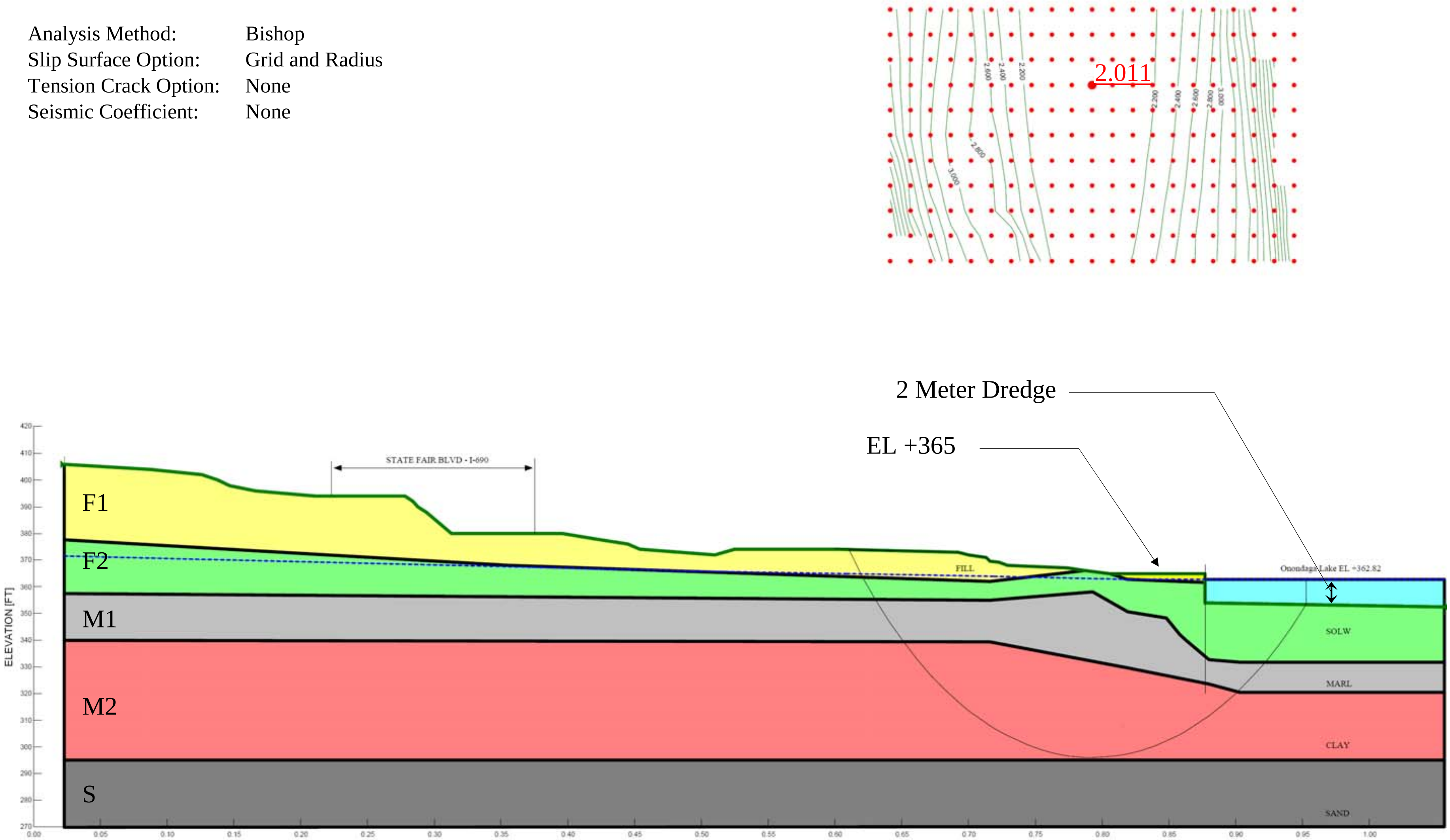
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: JLR	DATE: 08-27-07	FILE No.
N/A	CH'KD BY:	DATE:	9801
SECTION B – SHORELINE ALIGNMENT			CASE
DREDGE TO ELEVATION +332 FT			SH – 1A

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	F1 - FILL	Mohr-Coulomb	105	200	20
4	F2 - SOLW	Mohr-Coulomb	110	100	25
5	M1 - MARL	Undrained	105	450	0
6	M2 - CLAY	Undrained	117	400	0
7	S - SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

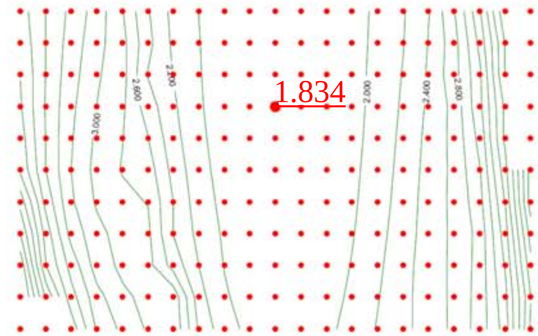
SYRACUSE NY

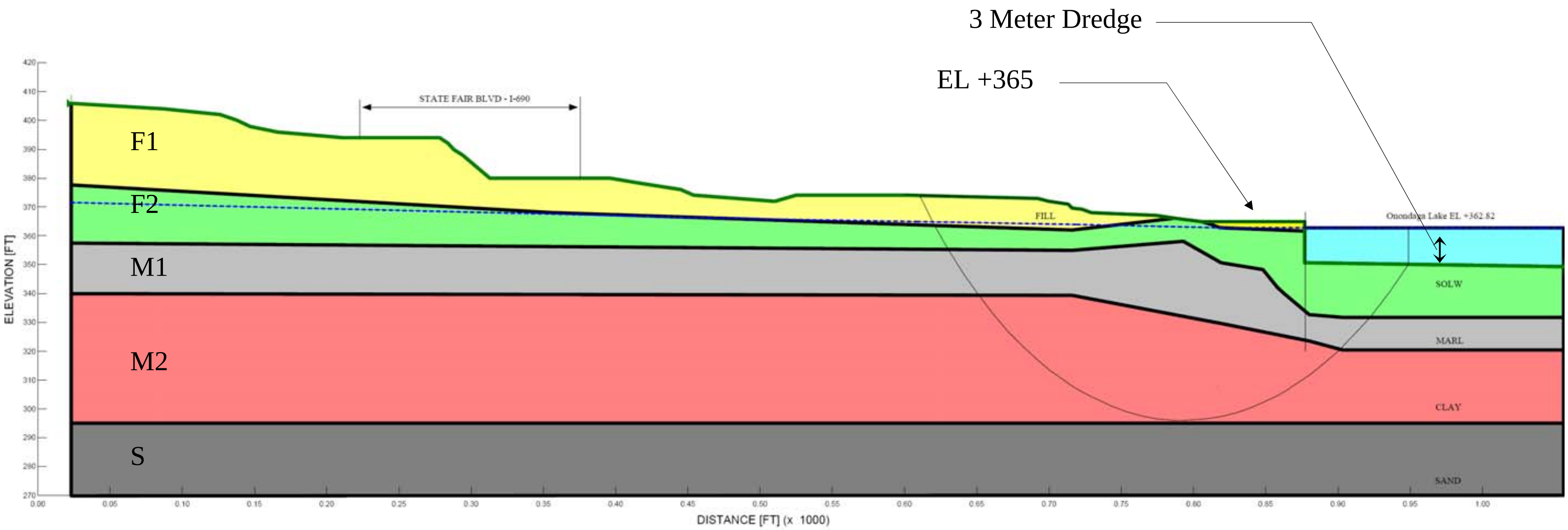
MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE N/A	MADE BY: JLR CH'KD BY:	DATE: 06-19-07 DATE:	FILE No. 9801
SECTION B 2 METER DREDGE			CASE IL - 1

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None





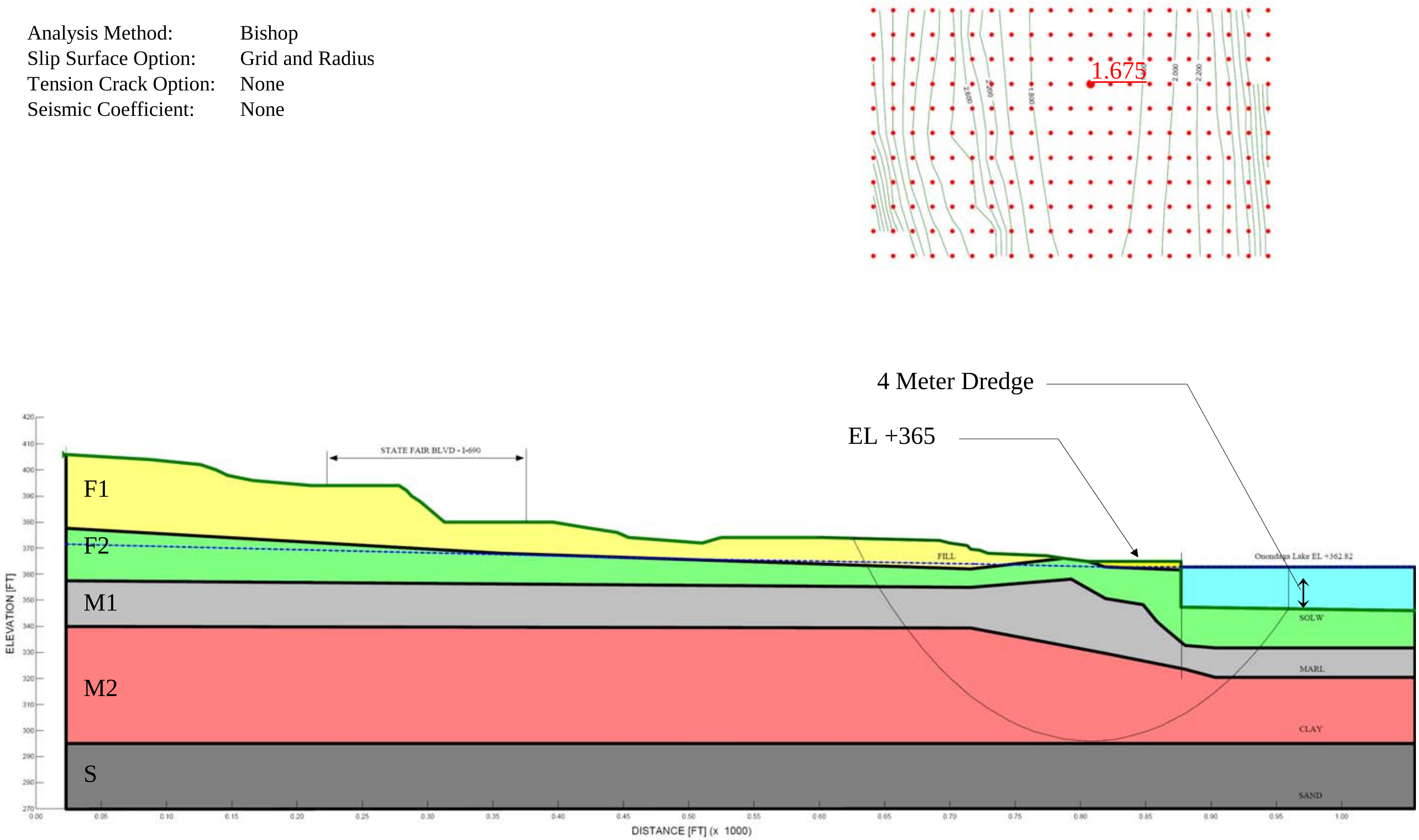
Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	F1 - FILL	Mohr-Coulomb	105	200	20
4	F2 - SOLW	Mohr-Coulomb	110	100	25
5	M1 - MARL	Undrained	105	450	0
6	M2 - CLAY	Undrained	117	400	0
7	S - SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS
225 WEST 34TH STREET, NEW YORK NY 10122

SCALE N/A	MADE BY: JLR	DATE: 06-19-07	FILE No. 9801
	CH'KD BY:	DATE:	
SECTION B 3 METER DREDGE			CASE IL - 2

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	F1 - FILL	Mohr-Coulomb	105	200	20
4	F2 - SOLW	Mohr-Coulomb	110	100	25
5	M1 - MARL	Undrained	105	450	0
6	M2 - CLAY	Undrained	117	400	0
7	S - SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

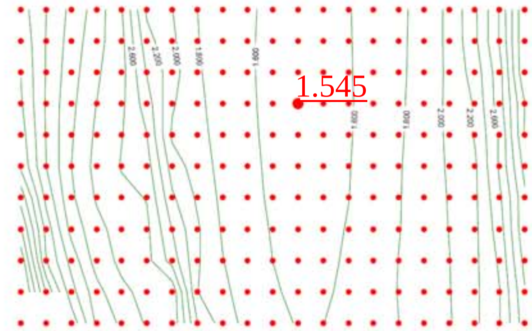
SYRACUSE NY

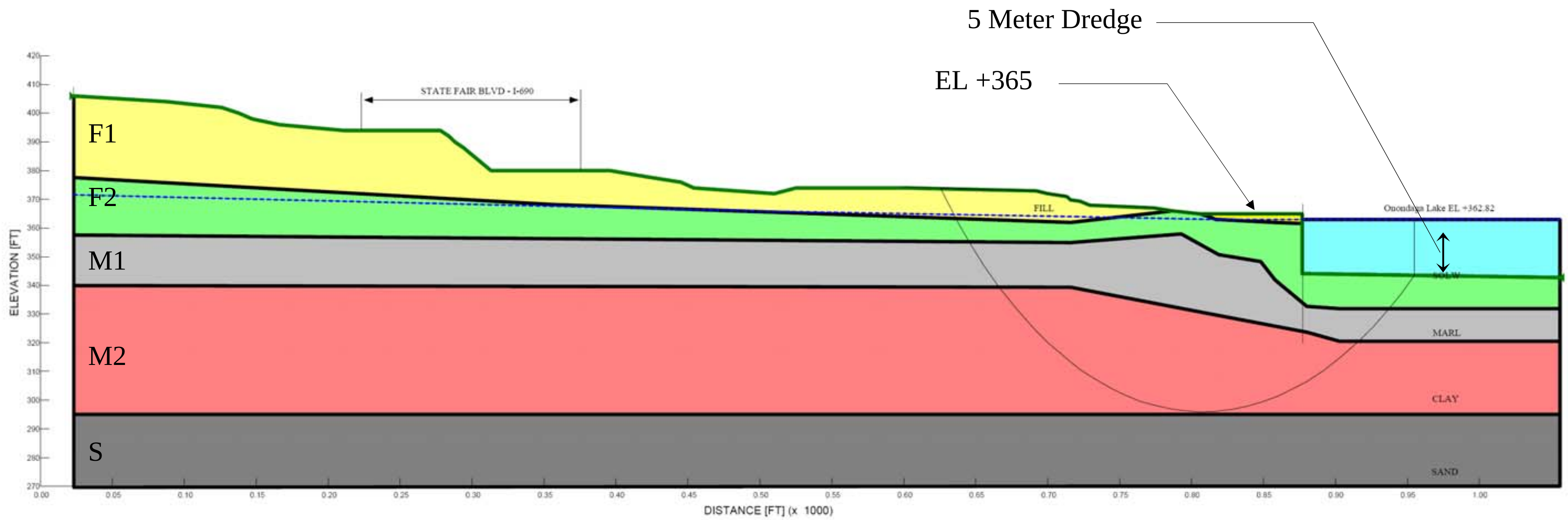
MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: JLR	DATE: 06-19-07	FILE No.
N/A	CH'KD BY:	DATE:	9801
SECTION B 4 METER DREDGE			CASE IL - 3

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None





Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	F1 - FILL	Mohr-Coulomb	105	200	20
4	F2 - SOLW	Mohr-Coulomb	110	100	25
5	M1 - MARL	Undrained	105	450	0
6	M2 - CLAY	Undrained	117	400	0
7	S - SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

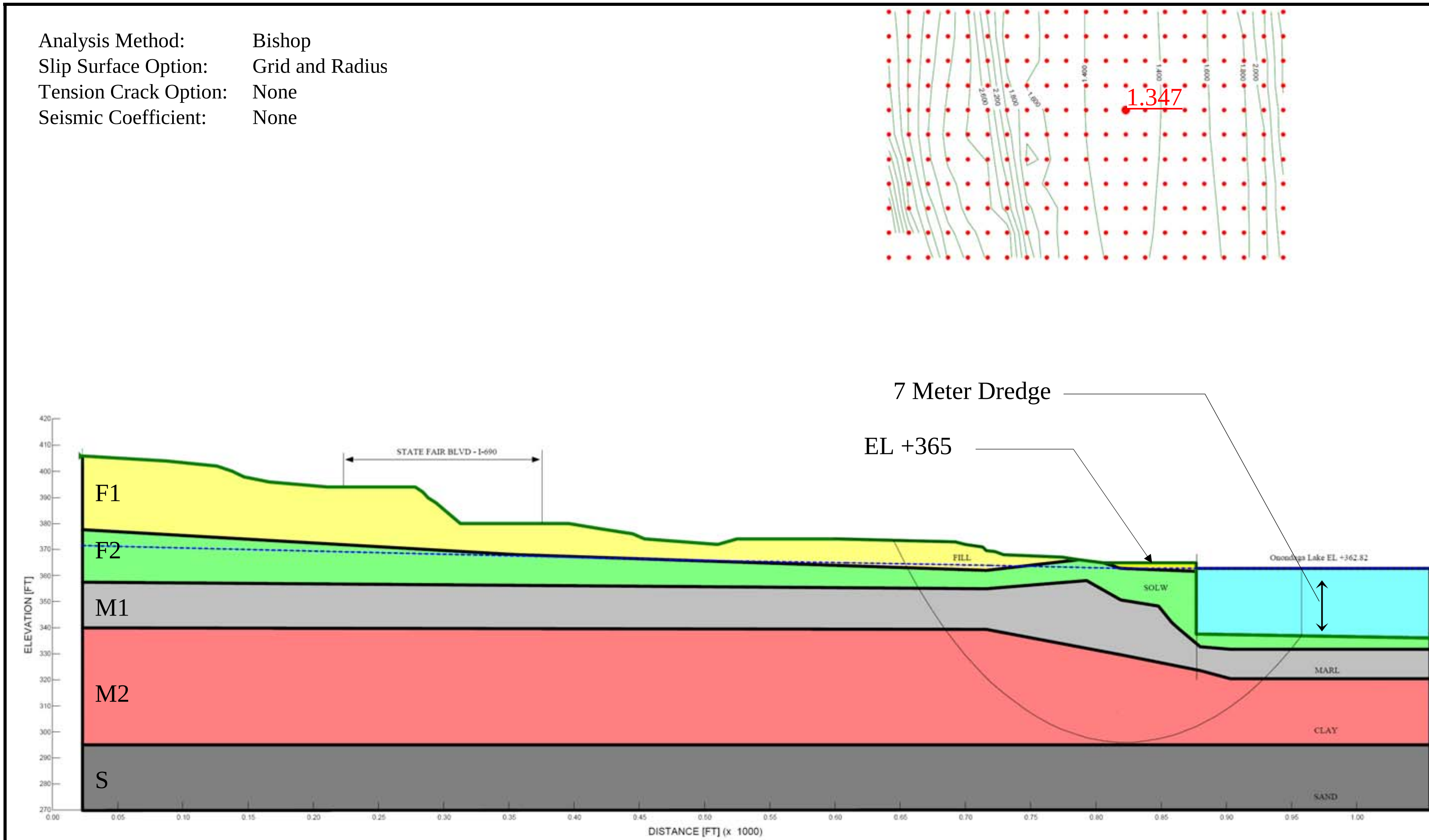
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: JLR	DATE: 06-19-07	FILE No.
N/A	CH'KD BY:	DATE:	9801
SECTION B 5 METER DREDGE			CASE IL - 4

Analysis Method:	Bishop
Slip Surface Option:	Grid and Radius
Tension Crack Option:	None
Seismic Coefficient:	None



Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	F1 - FILL	Mohr-Coulomb	105	200	20
4	F2 - SOLW	Mohr-Coulomb	110	100	25
5	M1 - MARL	Undrained	105	450	0
6	M2 - CLAY	Undrained	117	400	0
7	S - SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE

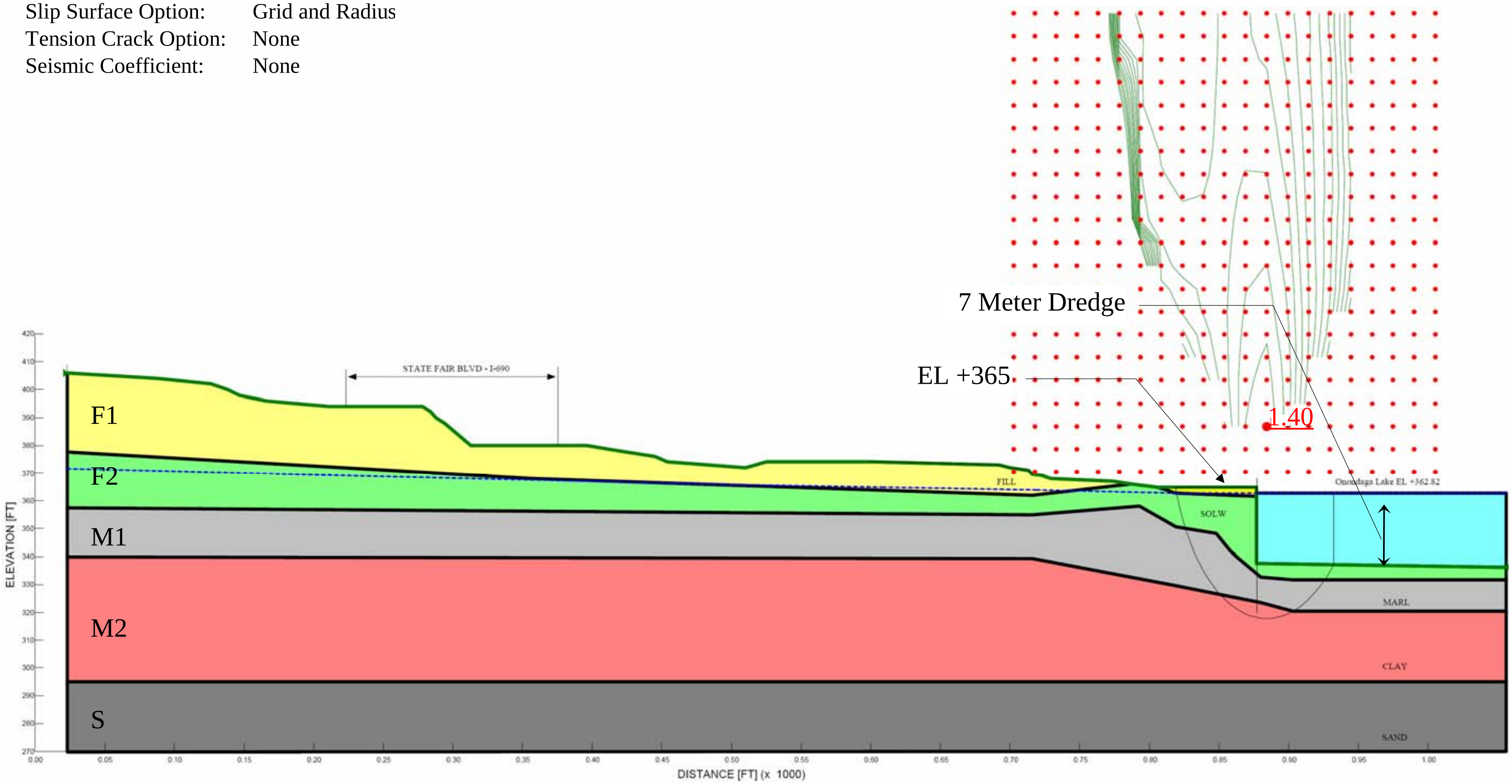
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS

225 WEST 34TH STREET, NEW YORK NY 10122

SCALE	MADE BY: JLR	DATE: 06-19-07	FILE No.
N/A	CH'KD BY:	DATE:	9801
SECTION B 7 METER DREDGE			CASE IL - 5

Analysis Method: Bishop
Slip Surface Option: Grid and Radius
Tension Crack Option: None
Seismic Coefficient: None



Revised Analysis includes Soil Strengths based on 2007 Design Shear Strengths

Soil	Soil Type	Soil Model	Unit Weight [pcf]	Cohesion [psf]	Friction Angle [deg]
1	WATER	No strength	62.4		
2	Added FILL	Mohr-Coulomb	105	0	29
3	F1 - FILL	Mohr-Coulomb	105	200	20
4	F2 - SOLW	Mohr-Coulomb	110	100	25
5	M1 - MARL	Undrained	105	240	0
6	M2 - CLAY	Undrained	117	550	0
7	S - SAND	Mohr-Coulomb	120	0	34

WILLIS / SEMET SITE
SYRACUSE NY

MUESER RUTLEDGE CONSULTING ENGINEERS
225 WEST 34TH STREET, NEW YORK NY 10122

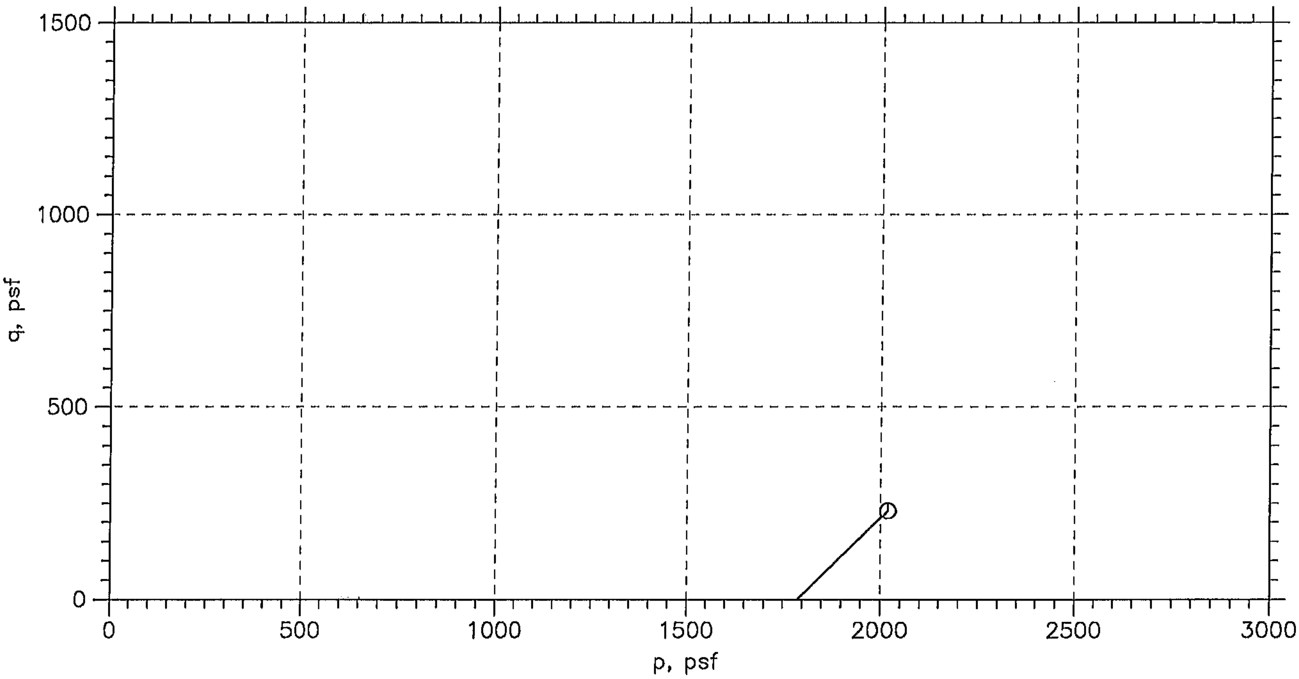
SCALE	MADE BY: JLR	DATE: 08-27-07	FILE No.
N/A	CH'KD BY:	DATE:	9801
SECTION B – IN LAKE ALIGNMENT 7 METER DREDGE			CASE IL – 5A

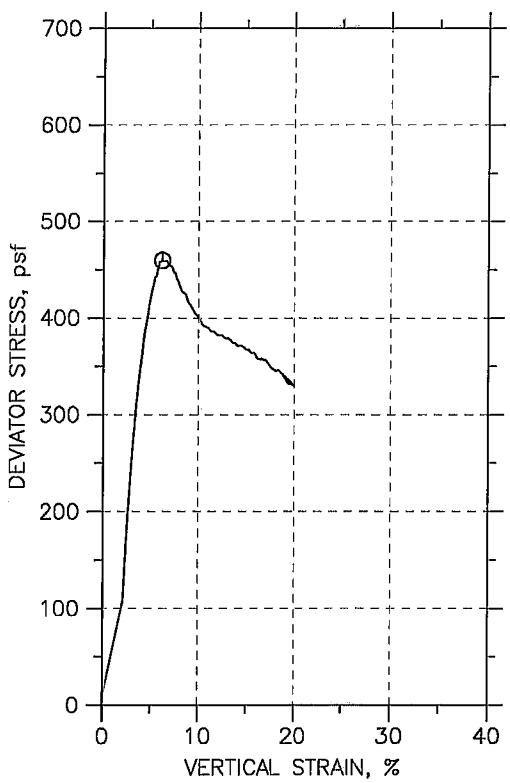
APPENDIX B

UNCONSOLIDATED

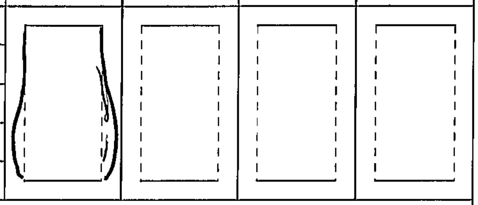
UNDRAINED (UU) DATA

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⦶			
Sample No.	0317-06			
Test No.	UU19			
Depth	46-48 ft			
Tested by	md			
Test Date	06/27/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6.2			
Water Content, %	29.2			
Dry Density, pcf	88.83			
Saturation, %	87.7			
Void Ratio	0.897			
Confining Stress, psf	1790			
Undrained Strength, psf	229.8			
Max. Dev. Stress, psf	459.6			
Strain at Failure, %	6.22			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	---			
Plastic Limit	---			
Plasticity Index	---			

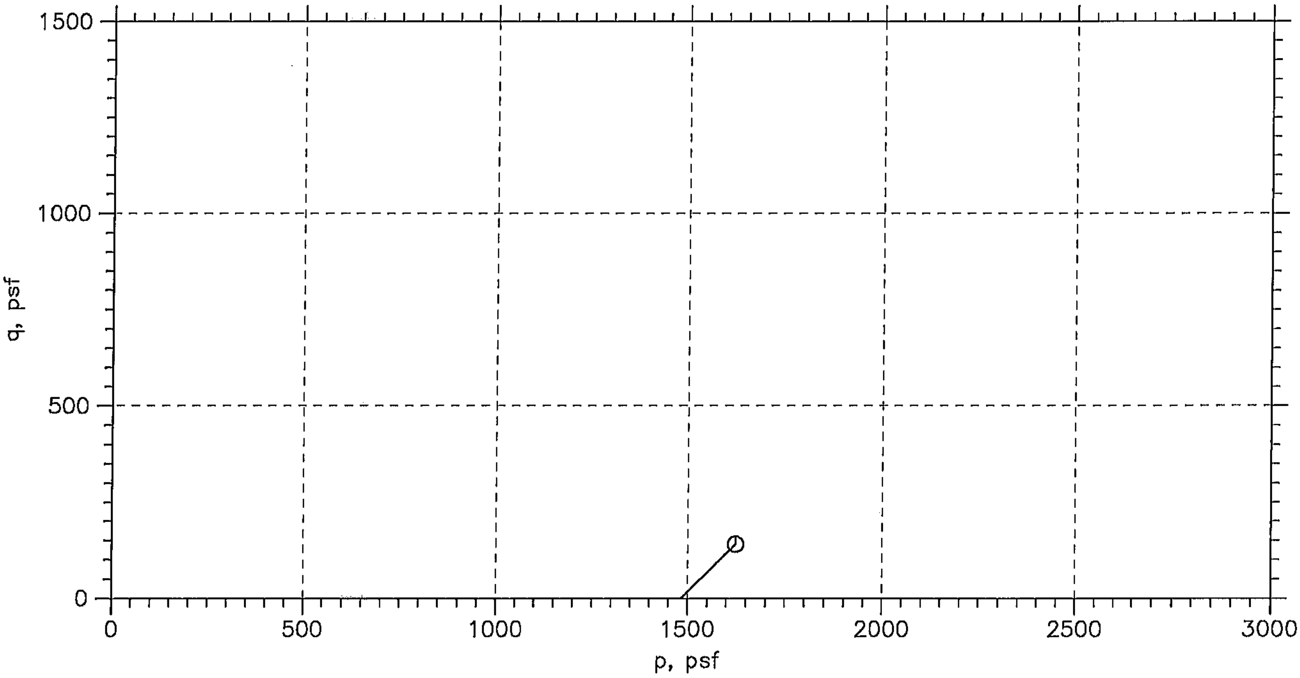


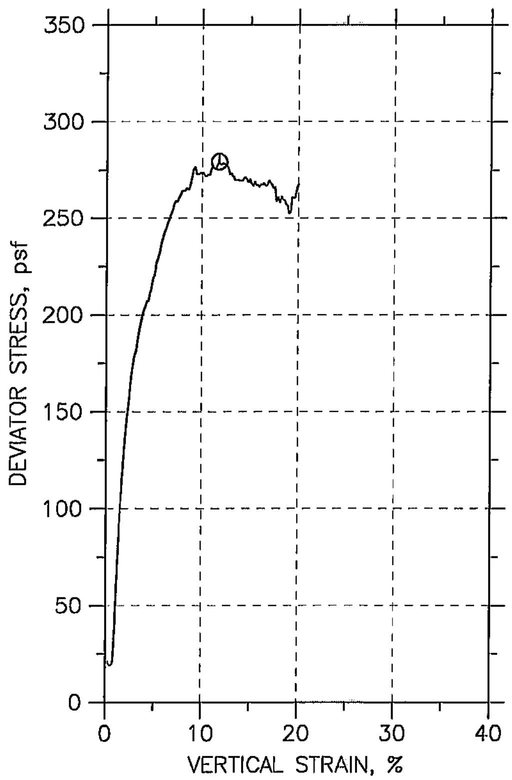
GeoTesting express, a subsidiary of Geocomp Corporation	Project: Onondaga
	Location: Syracuse, NY
	Project No.: GTX-7143
	Boring No.: 20067
	Sample Type: tube
	Description: Moist, brown silty clay
	Remarks: System D

Phase calculations based on start and end of test.

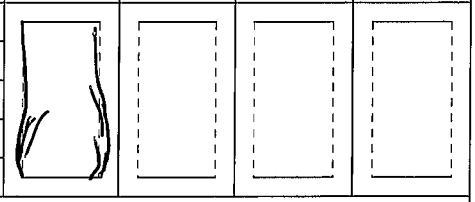
Fri, 29-JUN-2007 15:08:11

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⏀			
Sample No.	0317-07			
Test No.	UU20			
Depth	38-40 ft			
Tested by	md			
Test Date	06/27/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6.05			
Water Content, %	34.9			
Dry Density, pcf	83.86			
Saturation, %	93.2			
Void Ratio	1.01			
Confining Stress, psf	1485			
Undrained Strength, psf	139.7			
Max. Dev. Stress, psf	279.3			
Strain at Failure, %	11.8			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	---			
Plastic Limit	---			
Plasticity Index	---			



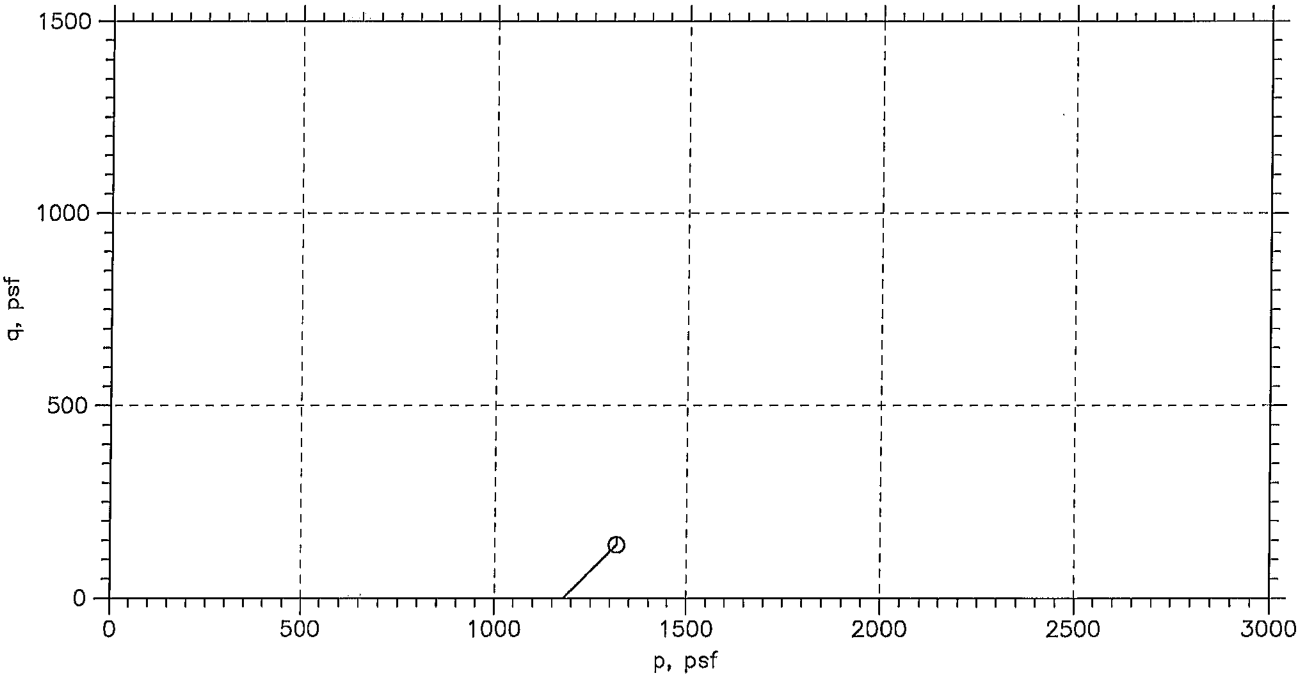
GeoTesting express
a subsidiary of Geocomp Corporation

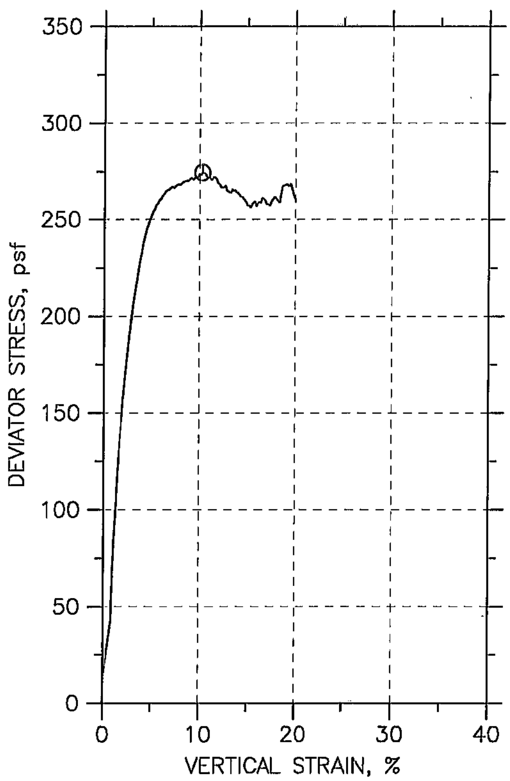
Project: Onondaga	
Location: Syracuse, NY	
Project No.: GTX-7143	
Boring No.: 20068	
Sample Type: tube	
Description: Moist, brown silty clay	
Remarks: System D	

Phase calculations based on start and end of test.

Fri, 29-JUN-2007 15:10:09

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⦶			
Sample No.	0317-09			
Test No.	UU21			
Depth	30-32 ft			
Tested by	md			
Test Date	06/27/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6.22			
Water Content, %	28.8			
Dry Density, pcf	84.49			
Saturation, %	78.0			
Void Ratio	0.995			
Confining Stress, psf	1180			
Undrained Strength, psf	137.3			
Max. Dev. Stress, psf	274.6			
Strain at Failure, %	10.3			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	---			
Plastic Limit	---			
Plasticity Index	---			

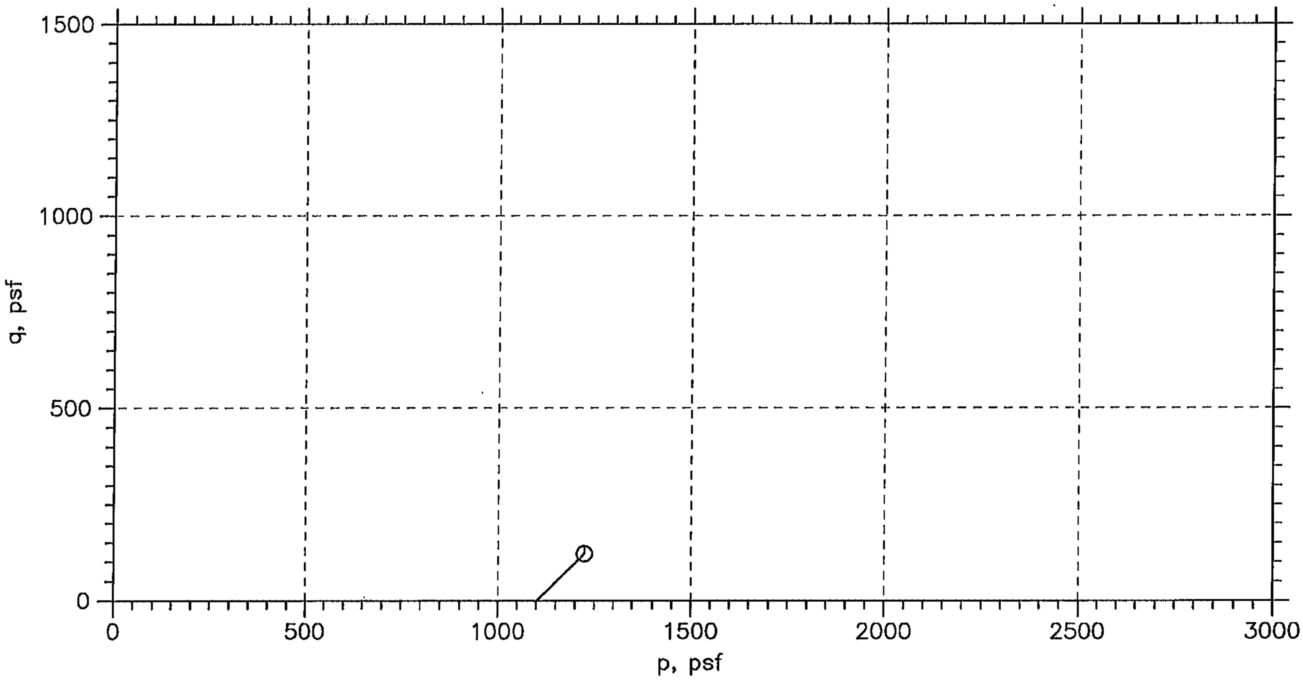
GeoTesting express
a subsidiary of Geocomp Corporation

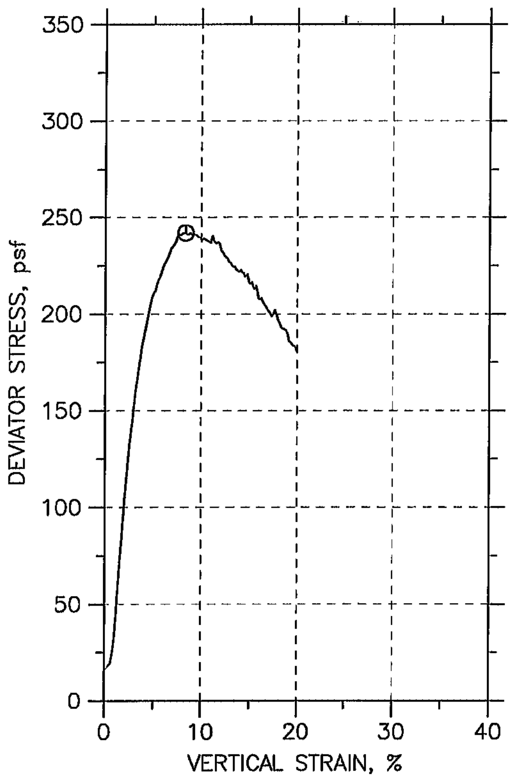
Project: Onondaga	
Location: Syracuse, NY	
Project No.: GTX-7143	
Boring No.: 2006	
Sample Type: tube	
Description: Moist brown silty clay	
Remarks: System D	

Phase calculations based on start and end of test.

Fri, 29-JUN-2007 15:14:34

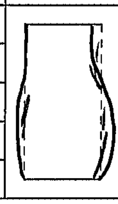
UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⦶			
Sample No.	0317-10			
Test No.	UU22			
Depth	28-30 ft			
Tested by	md			
Test Date	06/28/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6.2			
Water Content, %	29.8			
Dry Density, pcf	82.53			
Saturation, %	77.2			
Void Ratio	1.04			
Confining Stress, psf	1104			
Undrained Strength, psf	121			
Max. Dev. Stress, psf	242			
Strain at Failure, %	8.37			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	---			
Plastic Limit	---			
Plasticity Index	---			

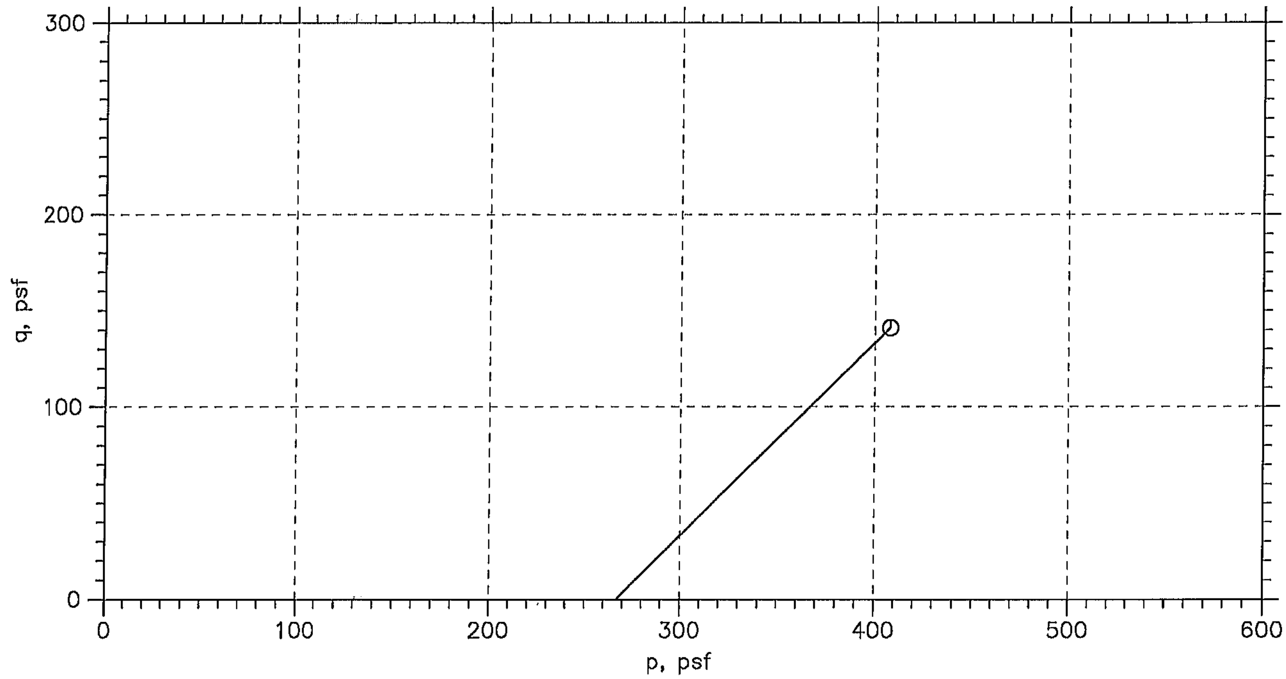
GeoTesting express
a subsidiary of Geocomp Corporation

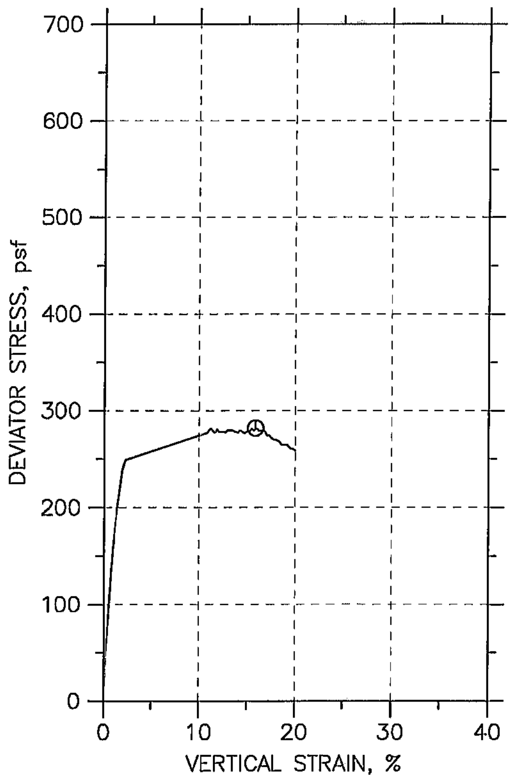
Project: Onondaga	
Location: Syracuse, NY	
Project No.: GTX-7143	
Boring No.: 20070	
Sample Type: tube	
Description: Moist, brown silty clay	
Remarks: System D	

Phase calculations based on start and end of test.

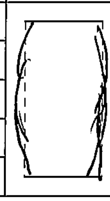
Fri, 29-JUN-2007 15:18:27

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊕			
Sample No.	0317-14			
Test No.	UU18			
Depth	6-8 ft			
Tested by	md			
Test Date	06/27/07			
Checked by	jdt			
Check Date				
Diameter, in	2			
Height, in	4			
Water Content, %	70.8			
Dry Density, pcf	56.46			
Saturation, %	96.4			
Void Ratio	1.99			
Confining Stress, psf	267			
Undrained Strength, psf	141.1			
Max. Dev. Stress, psf	282.1			
Strain at Failure, %	15.9			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	---			
Plastic Limit	---			
Plasticity Index	---			



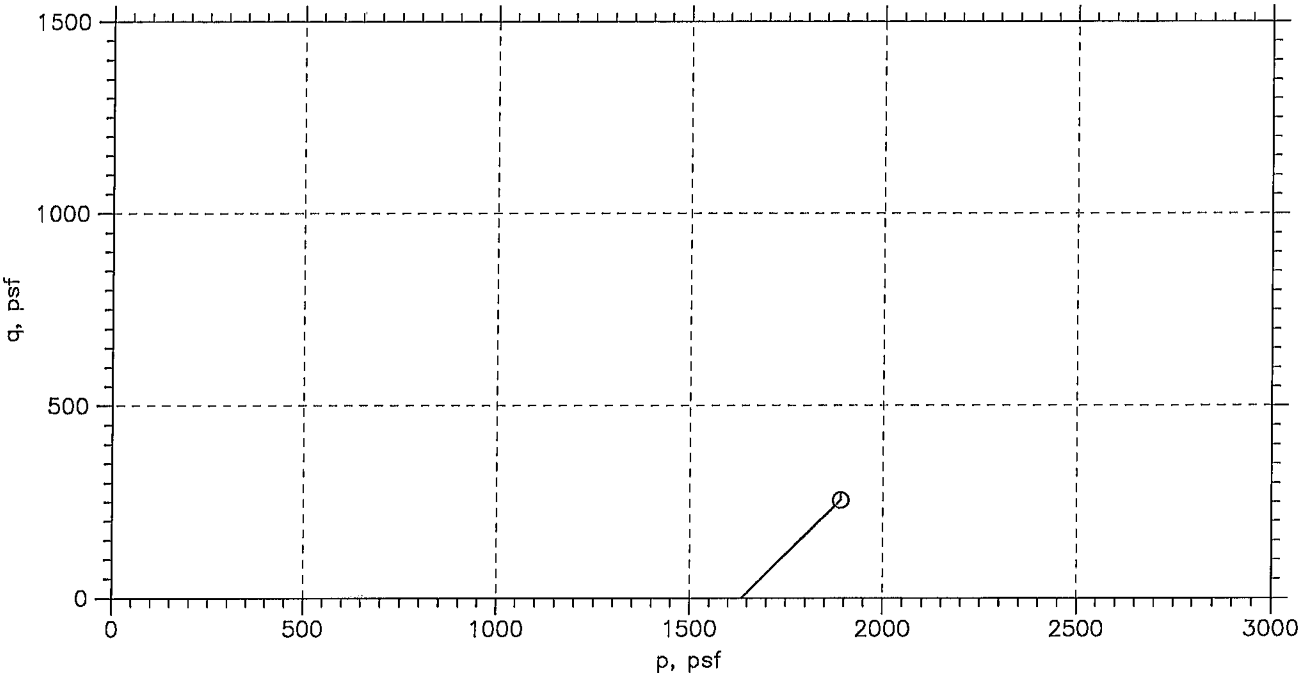
GeoTesting express
a subsidiary of Geocomp Corporation

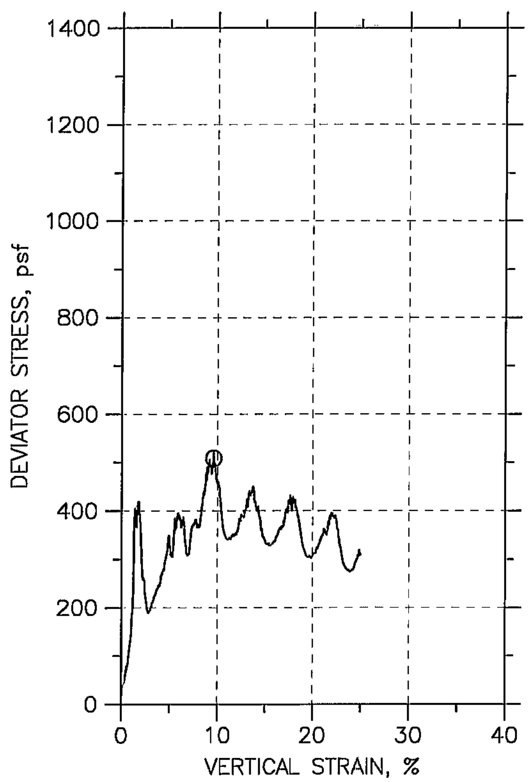
Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20034
Sample Type: Tube
Description: Moist light gray silt with shells
Remarks: System D

Phase calculations based on start and end of test.

Fri, 29-JUN-2007 16:11:48

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





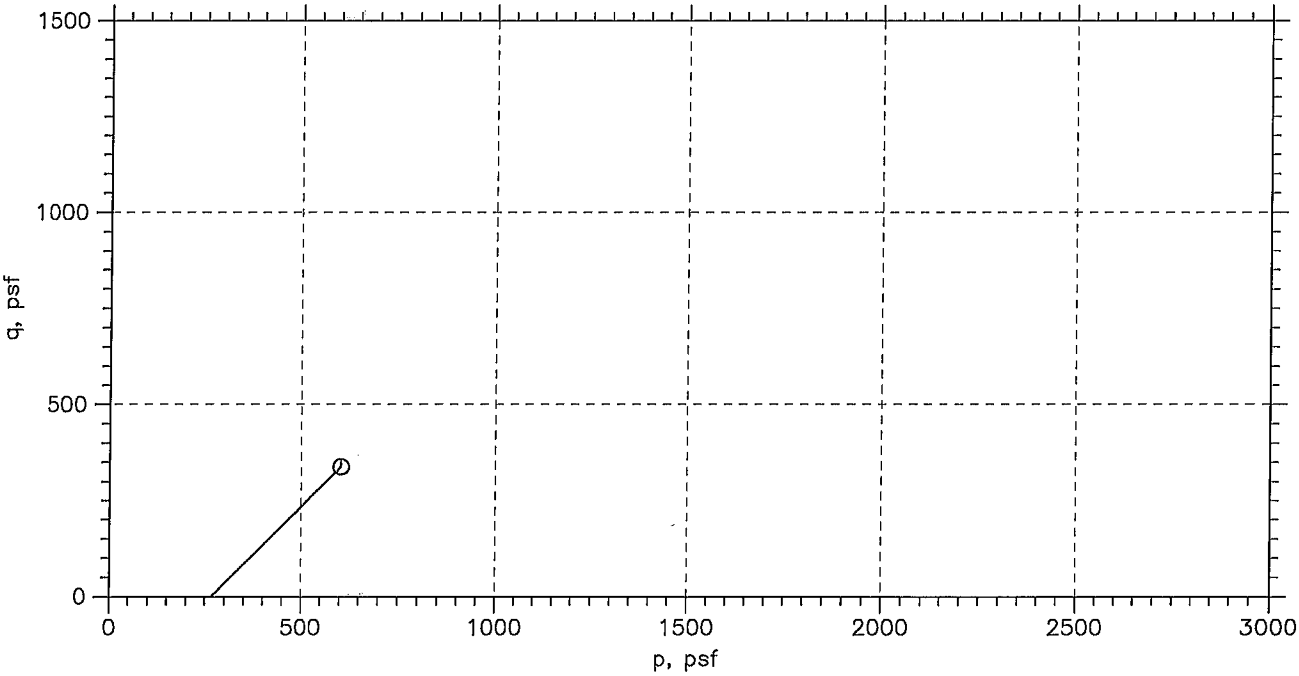
Symbol	⦶			
Sample No.	0317-15			
Test No.	UU-17			
Depth	42-44 ft			
Tested by	md			
Test Date	06/22/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6			
Water Content, %	39.8			
Dry Density, pcf	81.2			
Saturation, %	100.0			
Void Ratio	1.08			
Confining Stress, psf	1637			
Undrained Strength, psf	254.3			
Max. Dev. Stress, psf	508.6			
Strain at Failure, %	9.58			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	---			
Plastic Limit	---			
Plasticity Index	---			

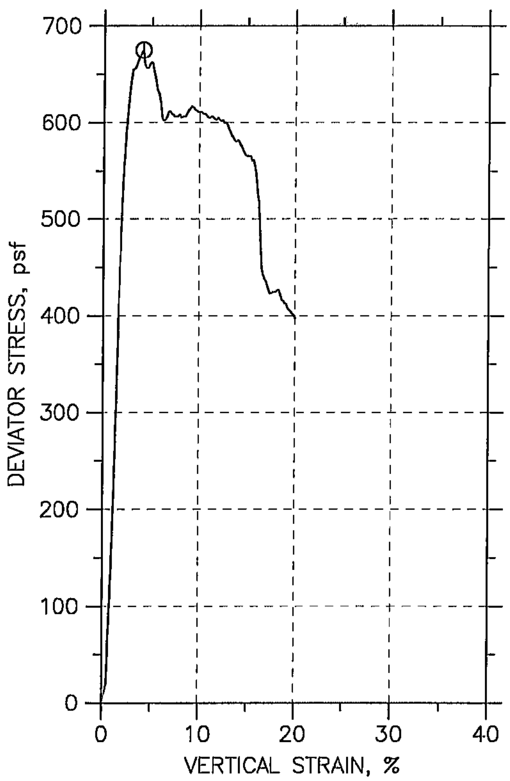
GeoTesting express, a subsidiary of Geocomp Corporation	Project: Onondaga
	Location: Syracuse, NY
	Project No.: GTX-7143
	Boring No.: 20034
	Sample Type: tube
	Description: Moist, brown silty clay
	Remarks: System A

Phase calculations based on start and end of test.

Fri, 29-JUN-2007 16:01:11

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	Ø			
Sample No.	0318-01			
Test No.	UU24			
Depth	6-8 ft			
Tested by	md			
Test Date	06/28/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6			
Water Content, %	193.4			
Dry Density, pcf	26.02			
Saturation, %	95.3			
Void Ratio	5.48			
Confining Stress, psf	267			
Undrained Strength, psf	337.6			
Max. Dev. Stress, psf	675.3			
Strain at Failure, %	4.1			
Strain Rate, %/min	1			
Estimated Specific Gravity	2.7			
Liquid Limit	---			
Plastic Limit	---			
Plasticity Index	---			

GeoTesting express
a subsidiary of Geocomp Corporation

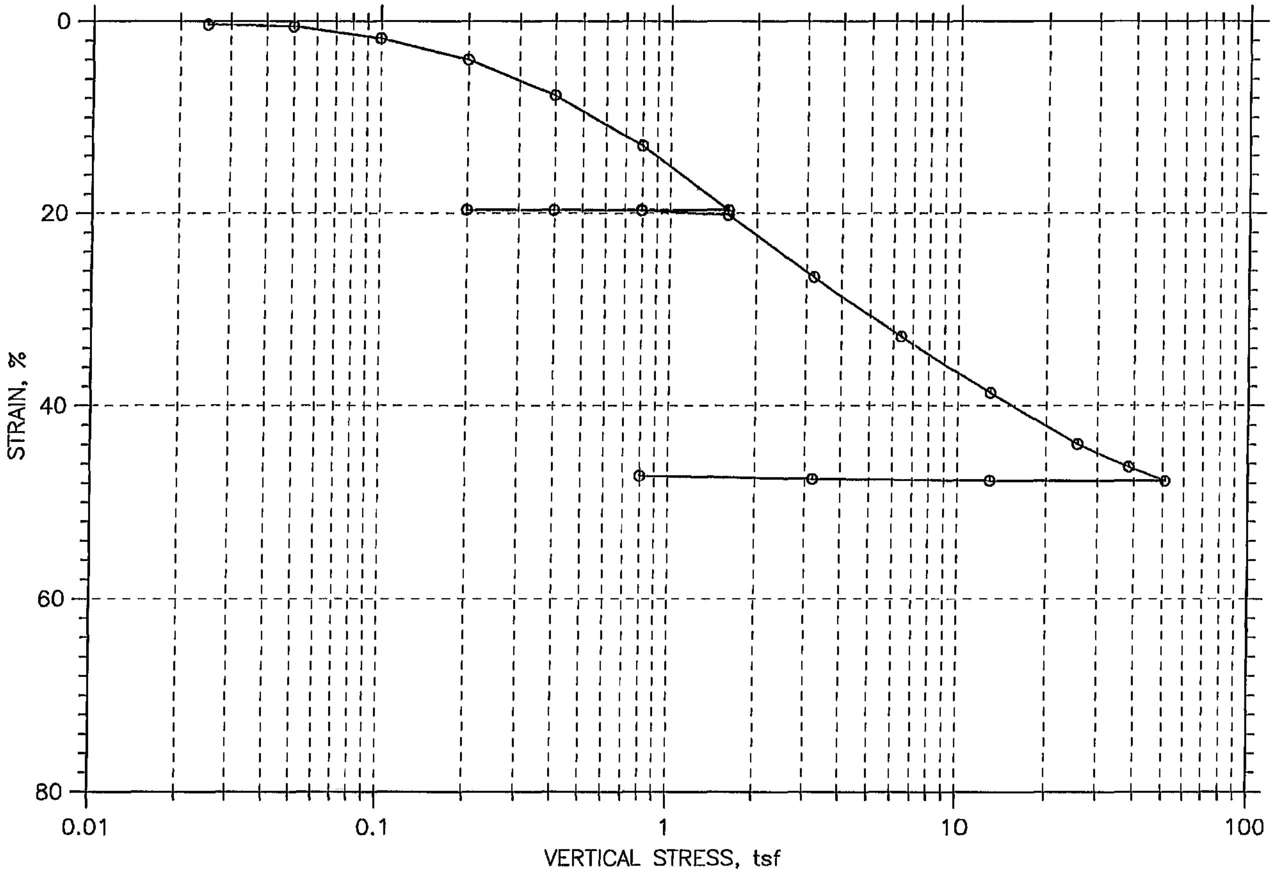
Project: Onondaga				
Location: Syracuse, NY				
Project No.: GTX-7143				
Boring No.: 20038				
Sample Type: tube				
Description: Moist, light gray silt				
Remarks: System D				

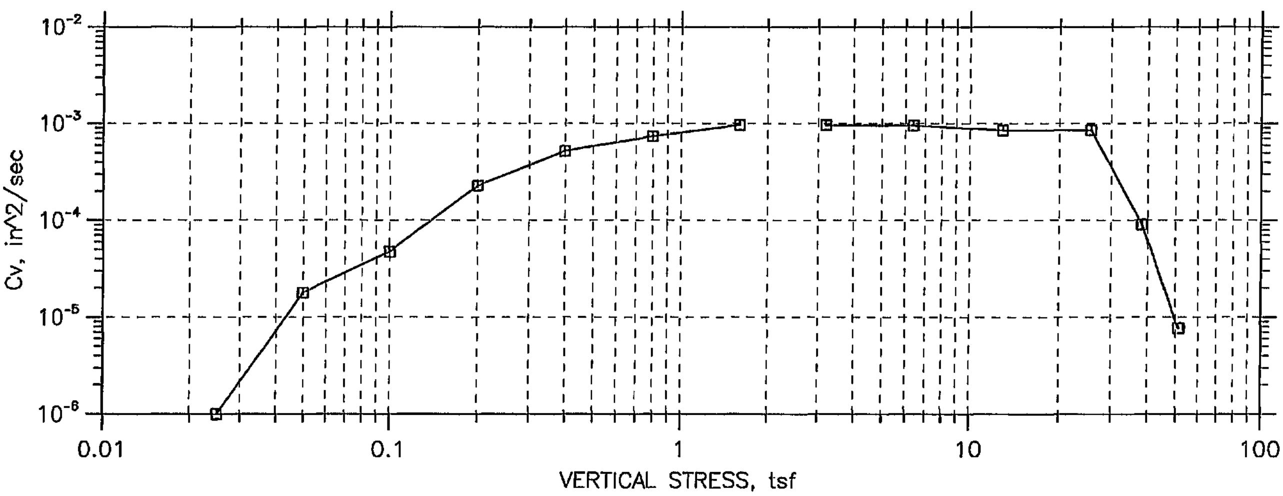
Phase calculations based on start and end of test.

Fri, 29-JUN-2007 15:24:08

CONSOLIDATION TEST DATA

SUMMARY REPORT



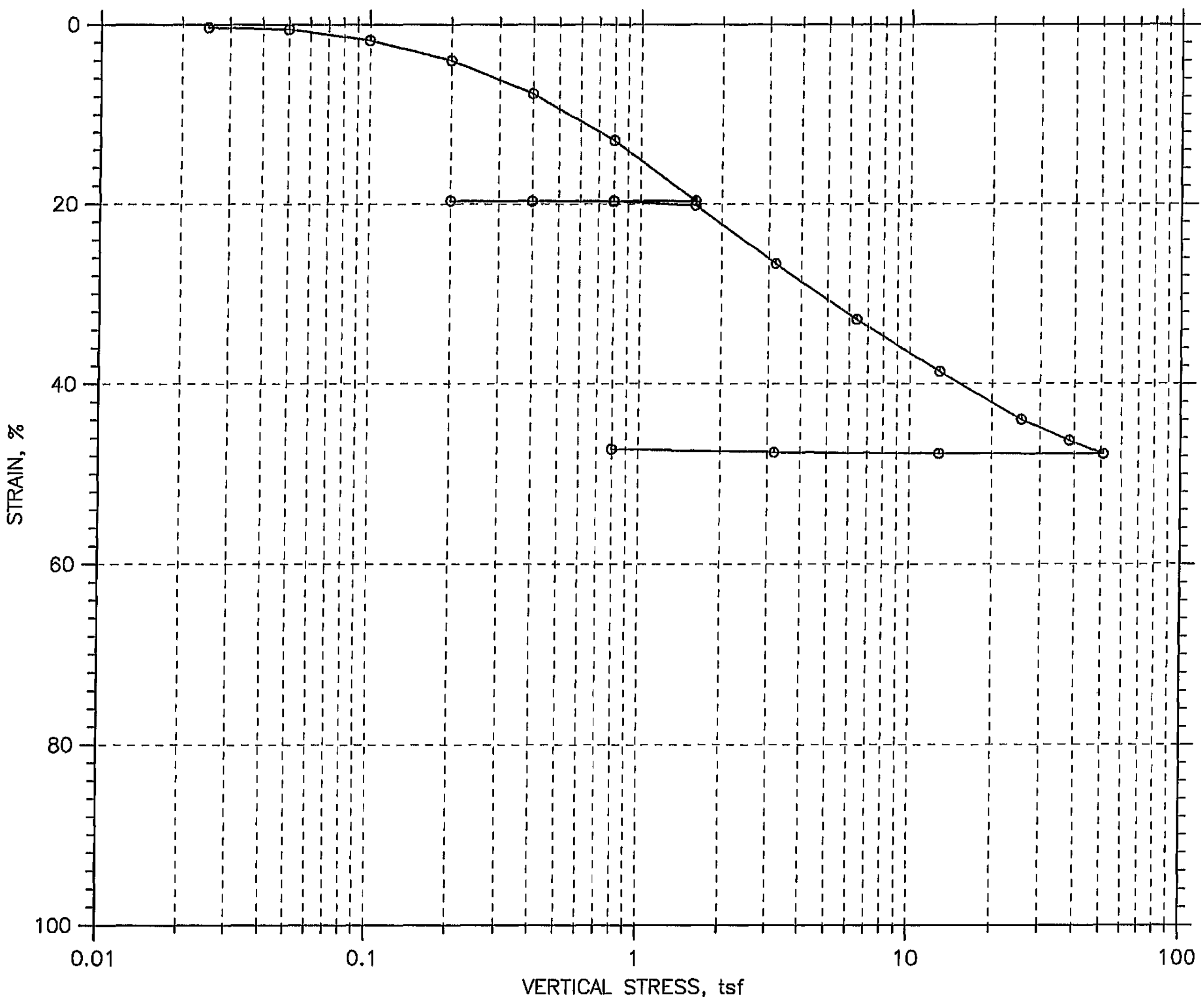


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

Mon, 16-JUL-2007 13:42:39

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	97.02	35.22
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	47.71	90.42
Compression Index: ---				Saturation, %	99.99	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	2.87	1.04
LL: ---	PL: ---	PI: ---	GS: 2.96			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

Mon, 16-JUL-2007 13:42:41

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20034
Sample No.: 0317-14
Test No.: C-33

Location: Syracuse NY
Tested By: md
Test Date: 06/14/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 6-8 ft
Elevation: ---

Soil Description: Moist, light gray silt
Remarks: System Q

Estimated Specific Gravity: 2.96
Initial Void Ratio: 2.87
Final Void Ratio: 1.04

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	2737	RING		287
Wt. Container + Wet Soil, gm	236.4	230.37	192.38	87.85
Wt. Container + Dry Soil, gm	175.78	170.73	170.73	67.14
Wt. Container, gm	100.66	109.25	109.25	8.34
Wt. Dry Soil, gm	75.12	61.477	61.477	58.8
Water Content, %	80.70	97.02	35.22	35.22
Void Ratio	---	2.87	1.04	---
Degree of Saturation, %	---	99.99	100.00	---
Dry Unit Weight, pcf	---	47.711	90.425	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20034
Sample No.: 0317-14
Test No.: C-33

Location: Syracuse NY
Tested By: md
Test Date: 06/14/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 6-8 ft
Elevation: ---

Soil Description: Moist, light gray silt
Remarks: System Q

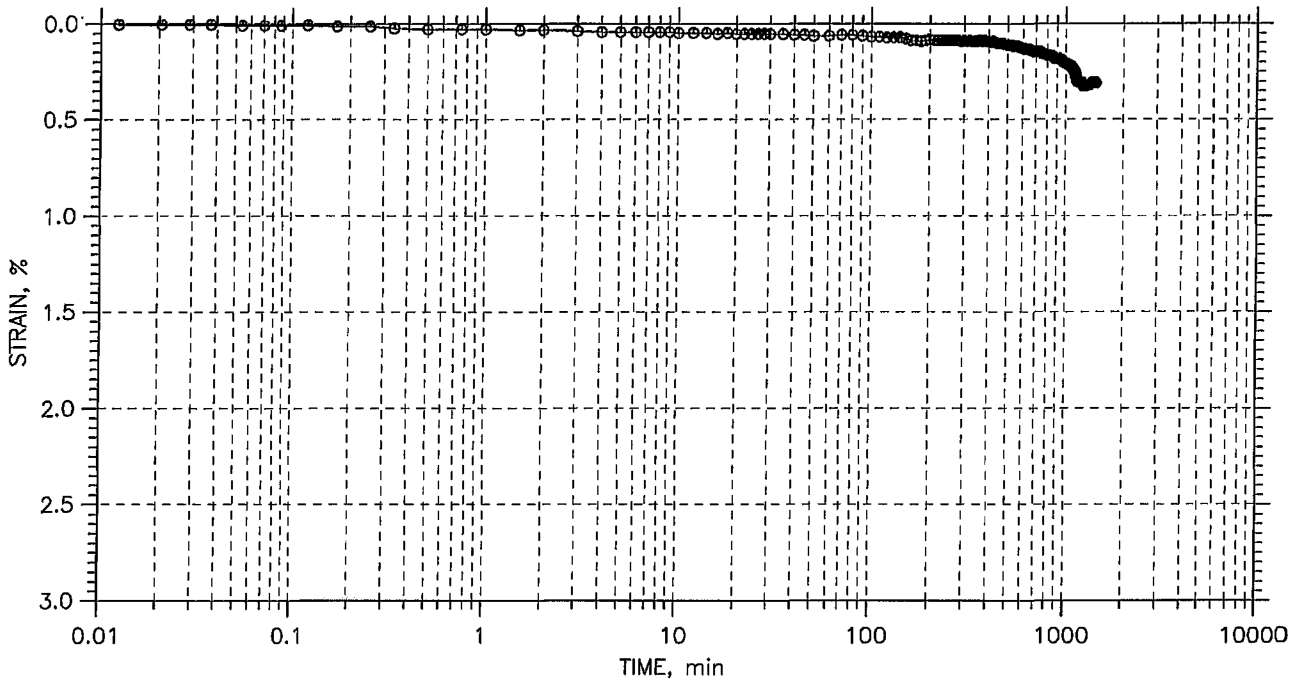
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.025	0.003104	2.857	0.31	819.3	0.0	1.00e-006	0.00e+000	1.00e-006
2	0.05	0.005126	2.849	0.51	45.7	0.0	1.78e-005	0.00e+000	1.78e-005
3	0.1	0.01745	2.802	1.75	16.9	0.0	4.75e-005	0.00e+000	4.75e-005
4	0.2	0.03967	2.716	3.97	3.4	0.0	2.28e-004	0.00e+000	2.28e-004
5	0.4	0.07677	2.572	7.68	1.4	0.0	5.21e-004	0.00e+000	5.21e-004
6	0.8	0.1291	2.370	12.91	0.8	1.0	7.93e-004	6.94e-004	7.40e-004
7	1.6	0.1966	2.109	19.66	0.6	0.0	9.70e-004	0.00e+000	9.70e-004
8	0.8	0.1965	2.109	19.65	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
9	0.2	0.1963	2.110	19.63	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
10	0.4	0.1967	2.108	19.67	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
11	0.8	0.1971	2.107	19.71	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
12	1.6	0.2015	2.089	20.15	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
13	3.2	0.2661	1.840	26.61	0.5	0.0	9.68e-004	0.00e+000	9.68e-004
14	6.4	0.328	1.600	32.80	0.4	0.0	9.56e-004	0.00e+000	9.56e-004
15	12.8	0.3862	1.375	38.62	0.4	0.0	8.56e-004	0.00e+000	8.56e-004
16	25.6	0.4394	1.169	43.94	0.3	0.0	8.56e-004	0.00e+000	8.56e-004
17	38.4	0.4631	1.077	46.31	2.7	0.0	9.04e-005	0.00e+000	9.04e-005
18	51.2	0.4778	1.021	47.78	30.0	0.0	7.68e-006	0.00e+000	7.68e-006
19	12.8	0.4772	1.023	47.72	0.1	0.0	3.61e-003	0.00e+000	3.61e-003
20	3.2	0.4758	1.028	47.58	0.1	0.0	4.28e-003	0.00e+000	4.28e-003
21	0.8	0.4724	1.042	47.24	9.5	0.0	2.40e-005	0.00e+000	2.40e-005

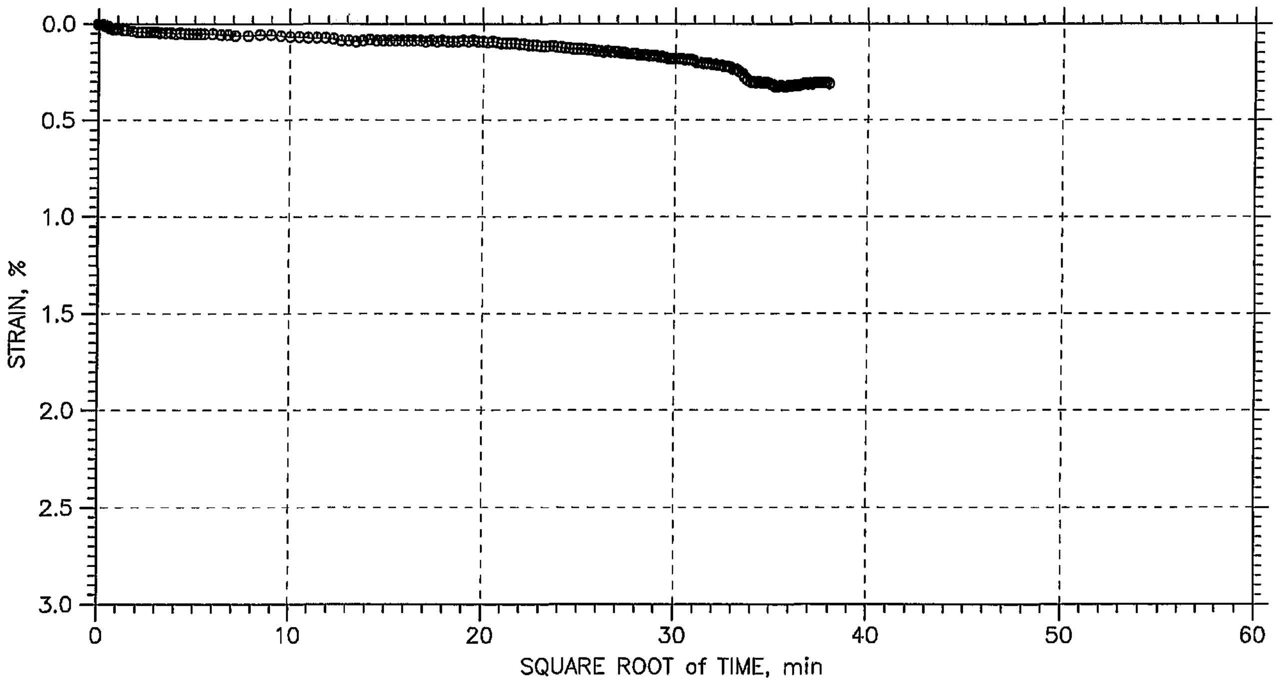
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

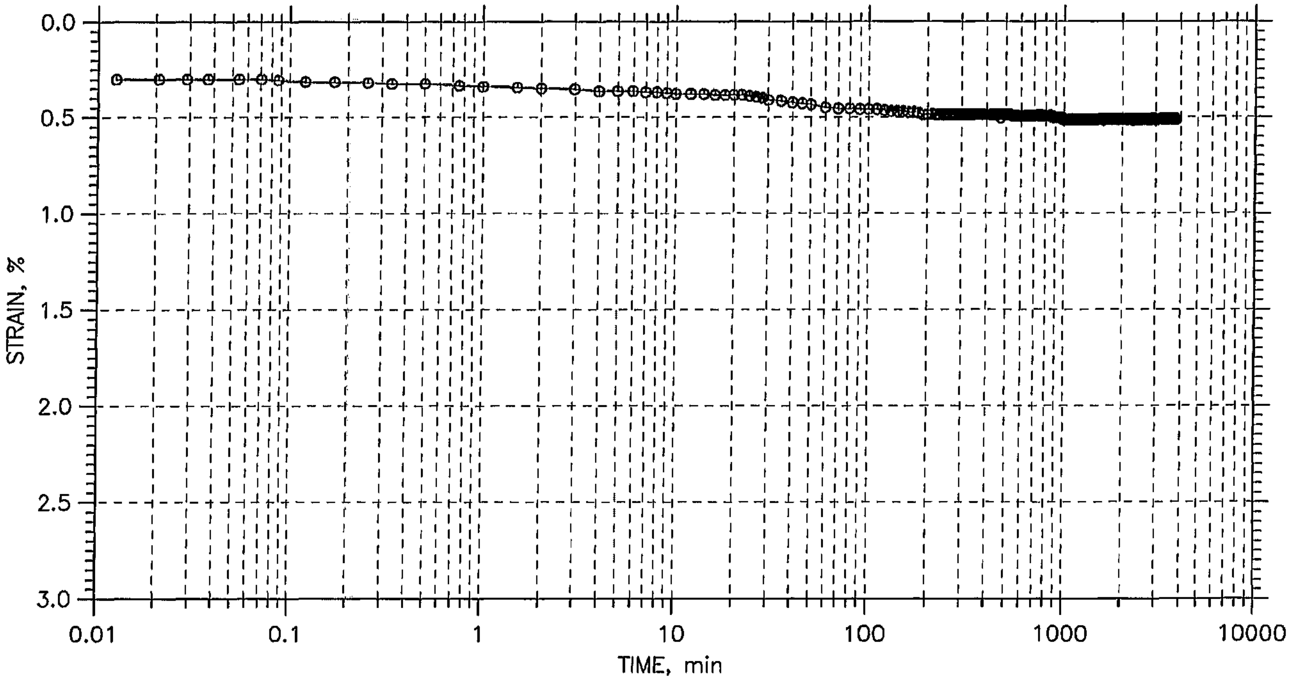
Mon, 16-JUL-2007 13:43:21

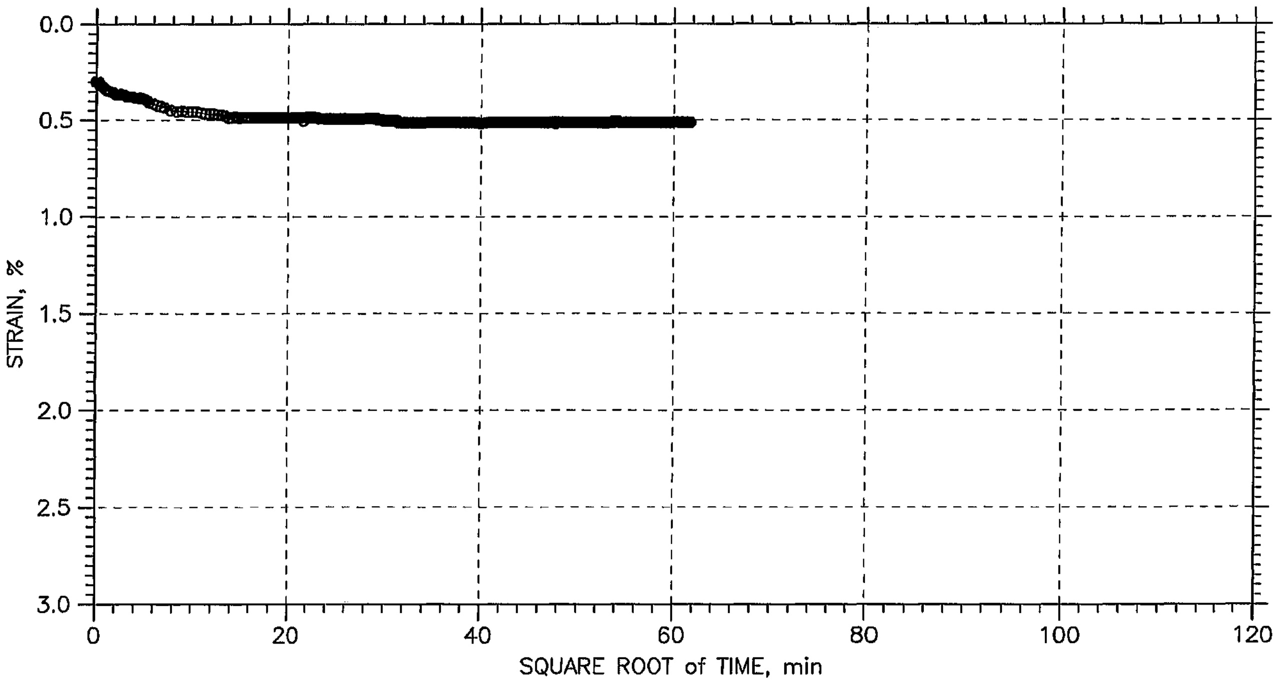
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

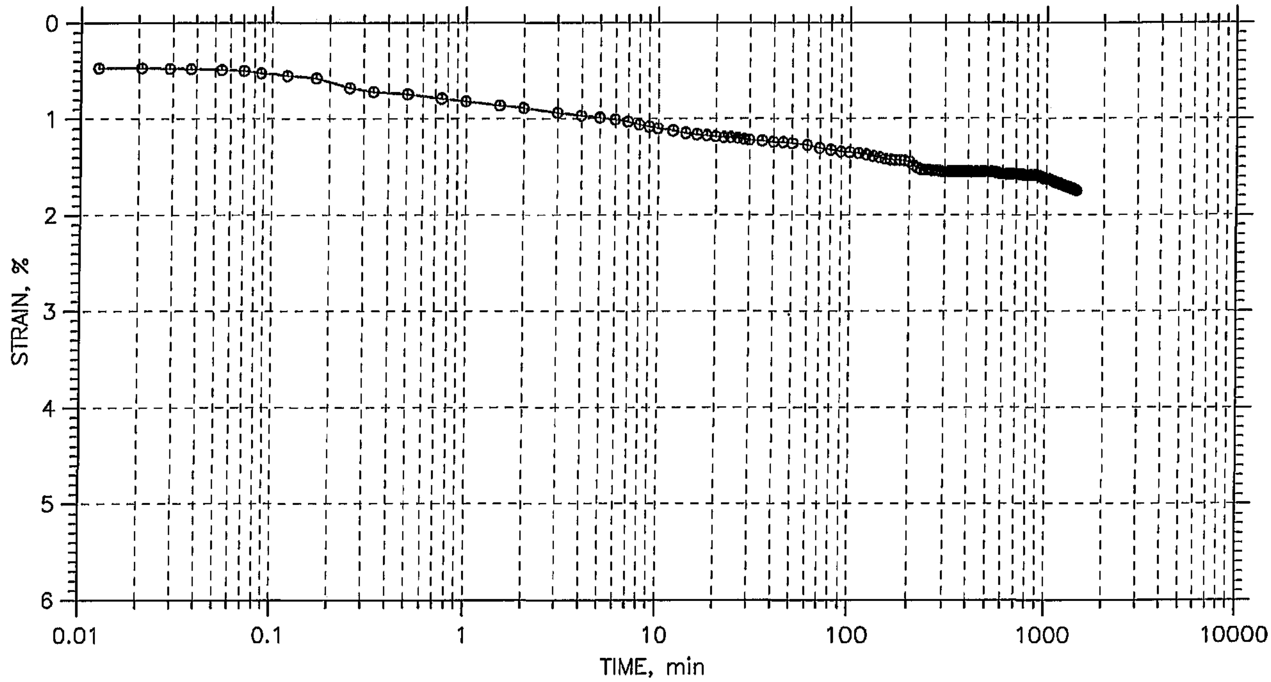
Mon, 16-JUL-2007 13:43:29

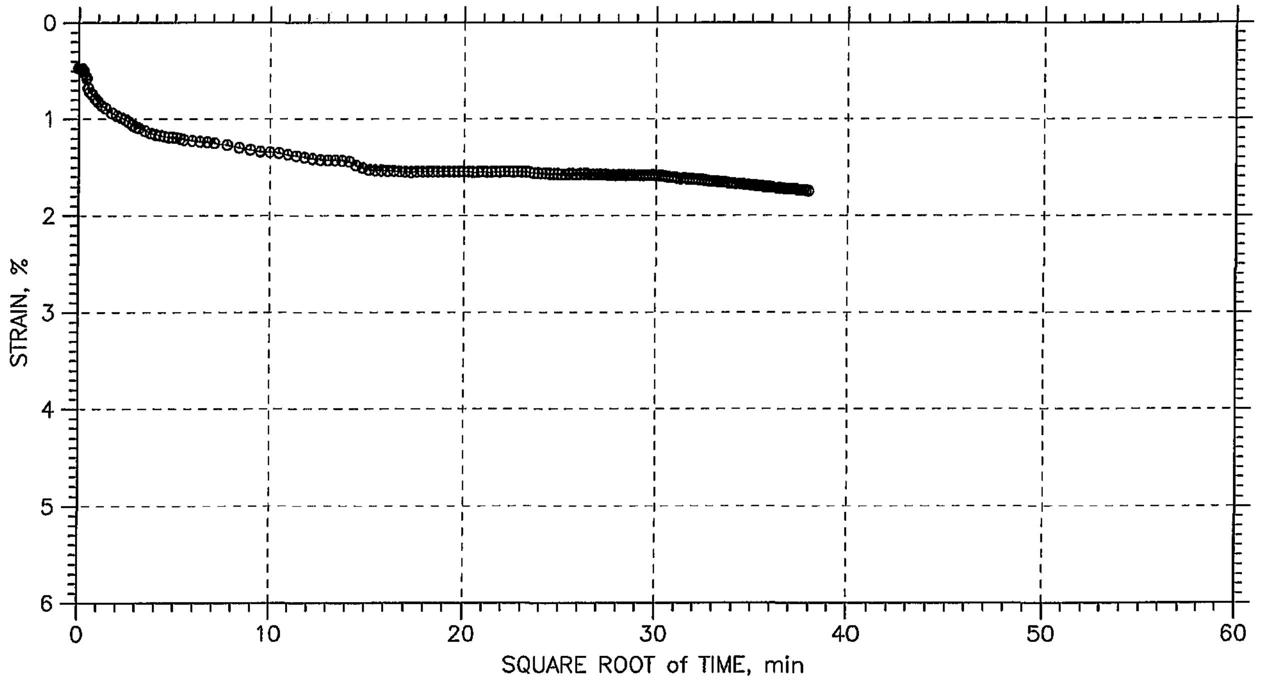
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

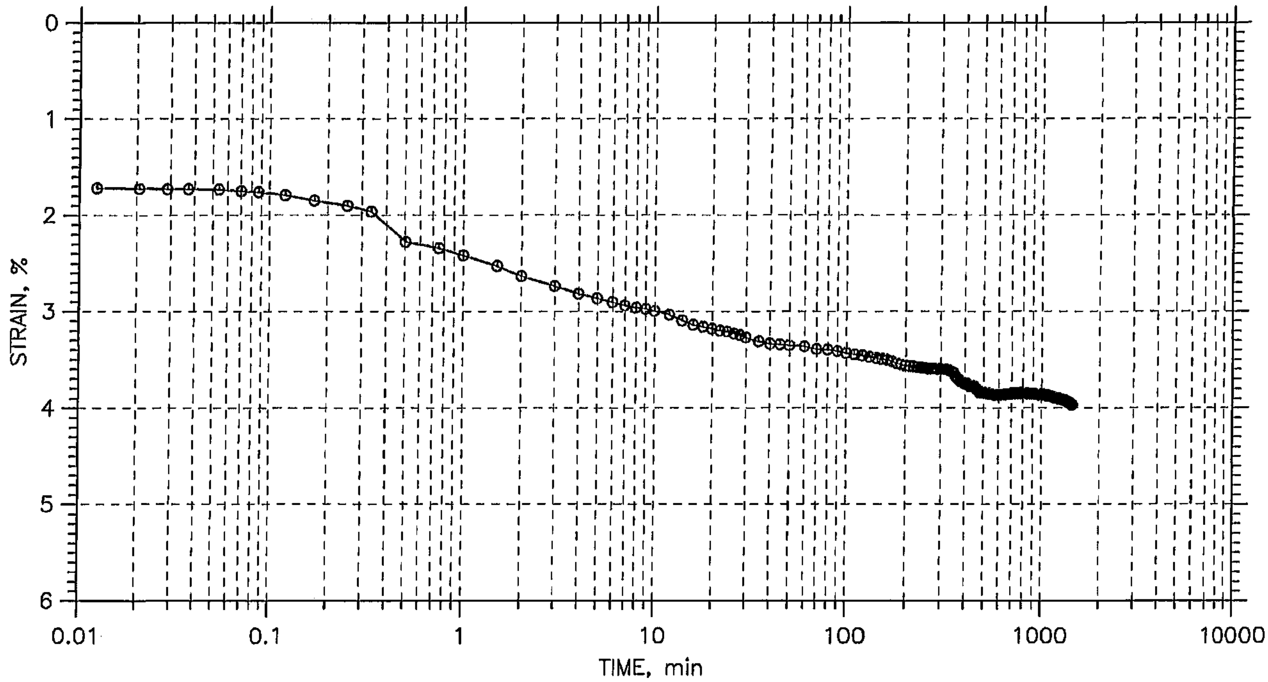
Mon, 16-JUL-2007 13:43:44

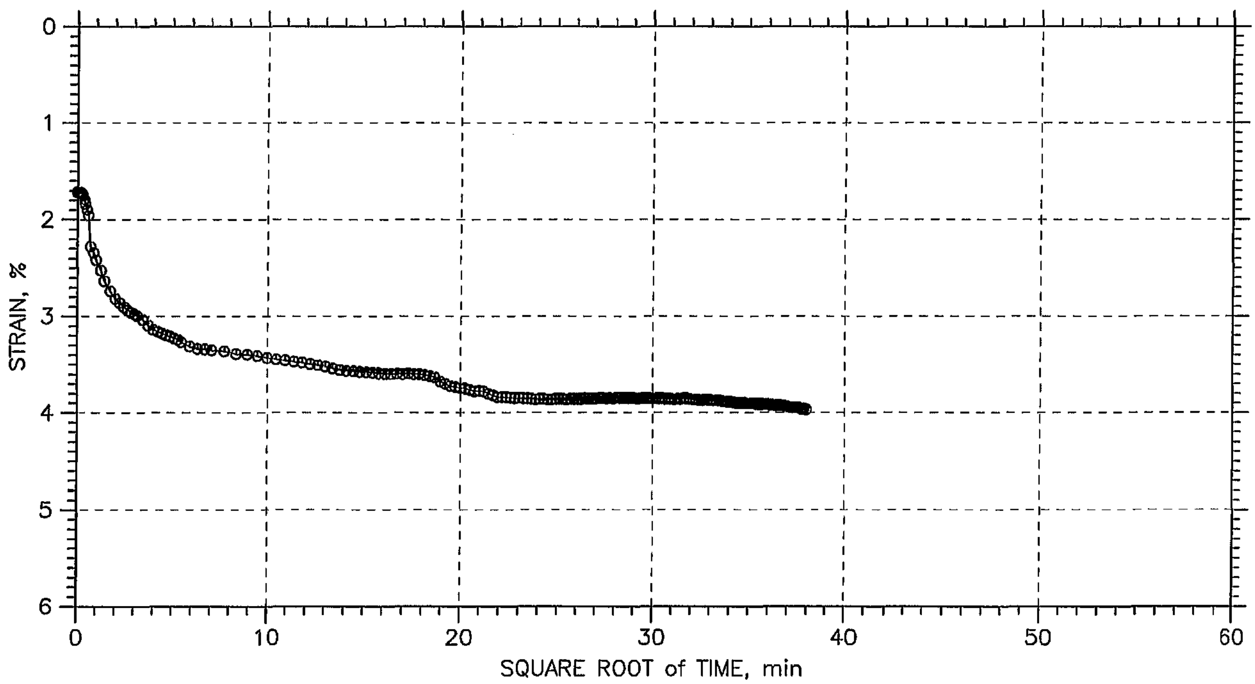
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express — a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

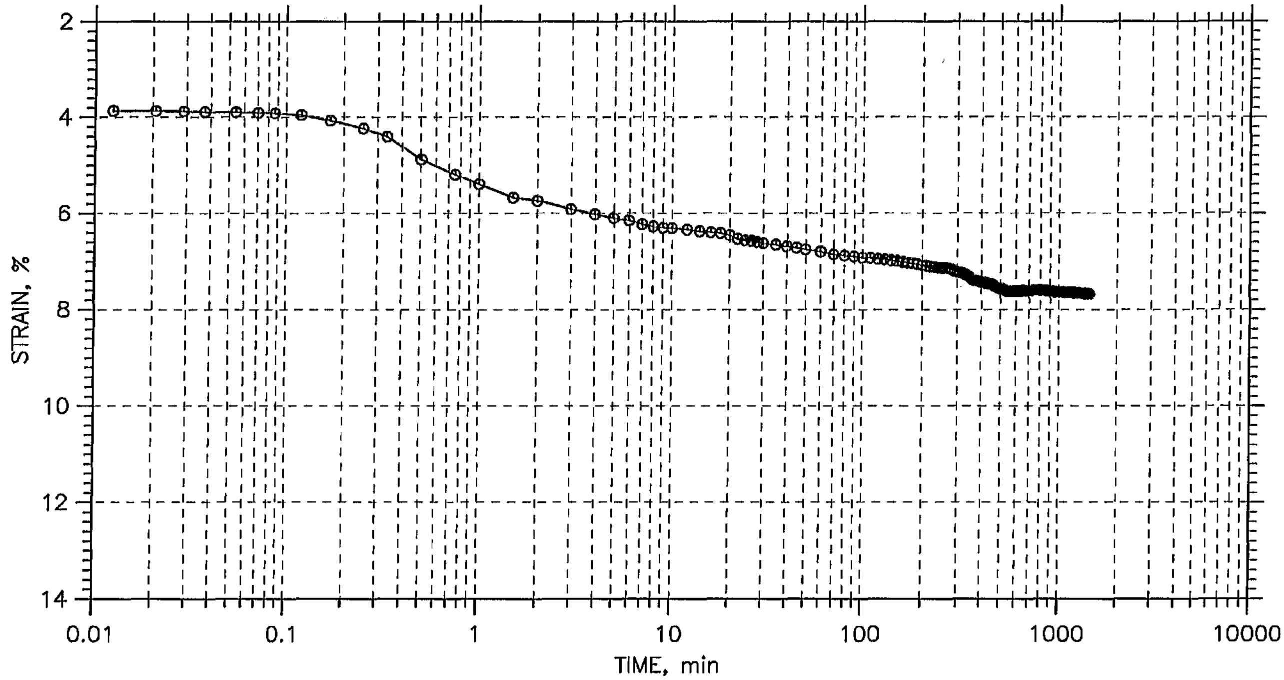
Mon, 16-JUL-2007 13:44:06

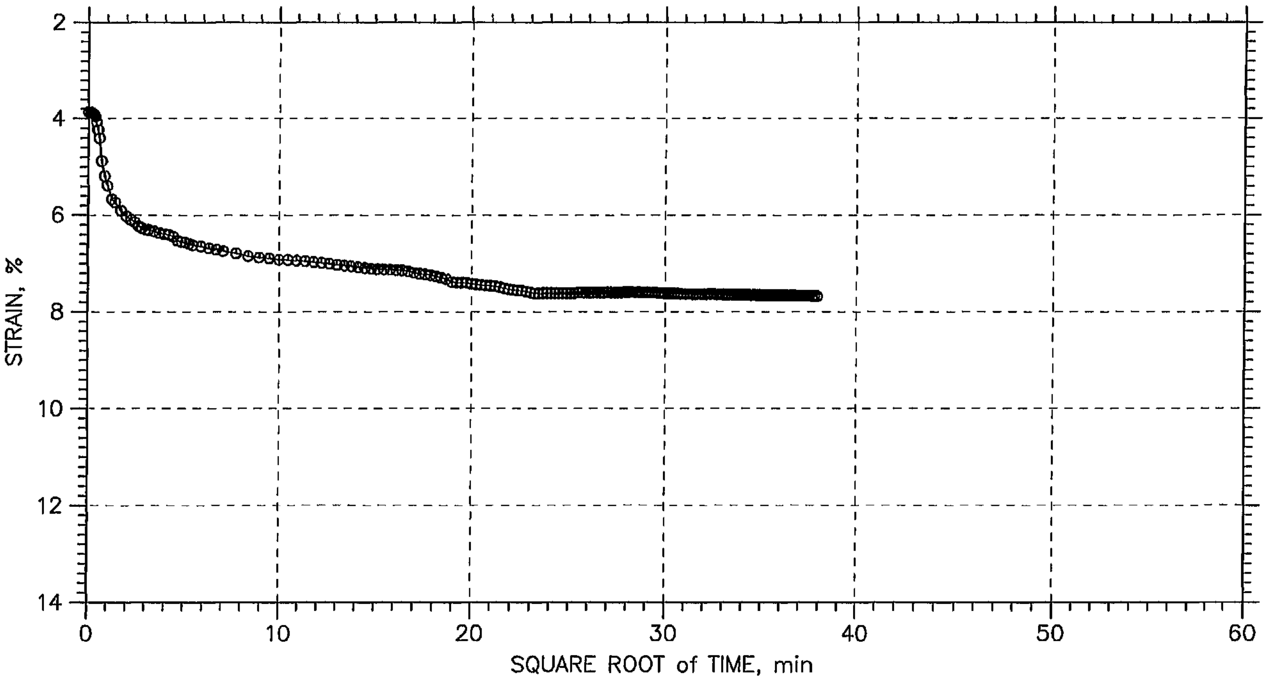
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

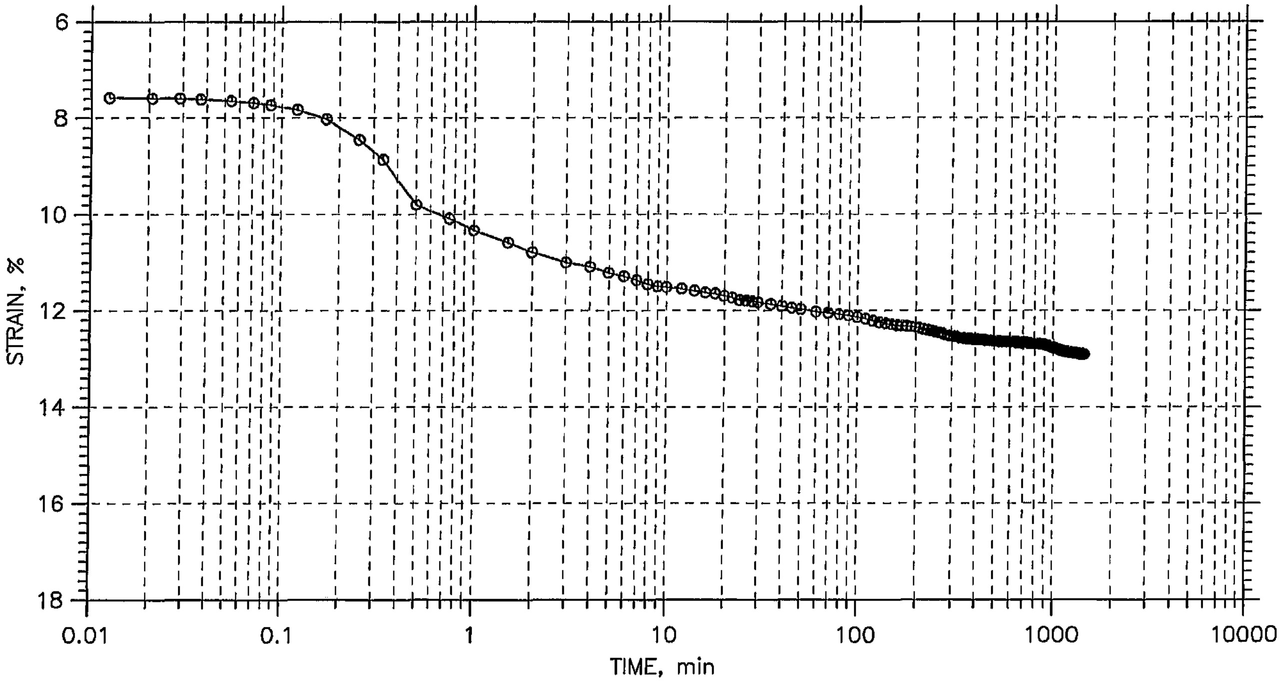
Mon, 16-JUL-2007 13:44:27

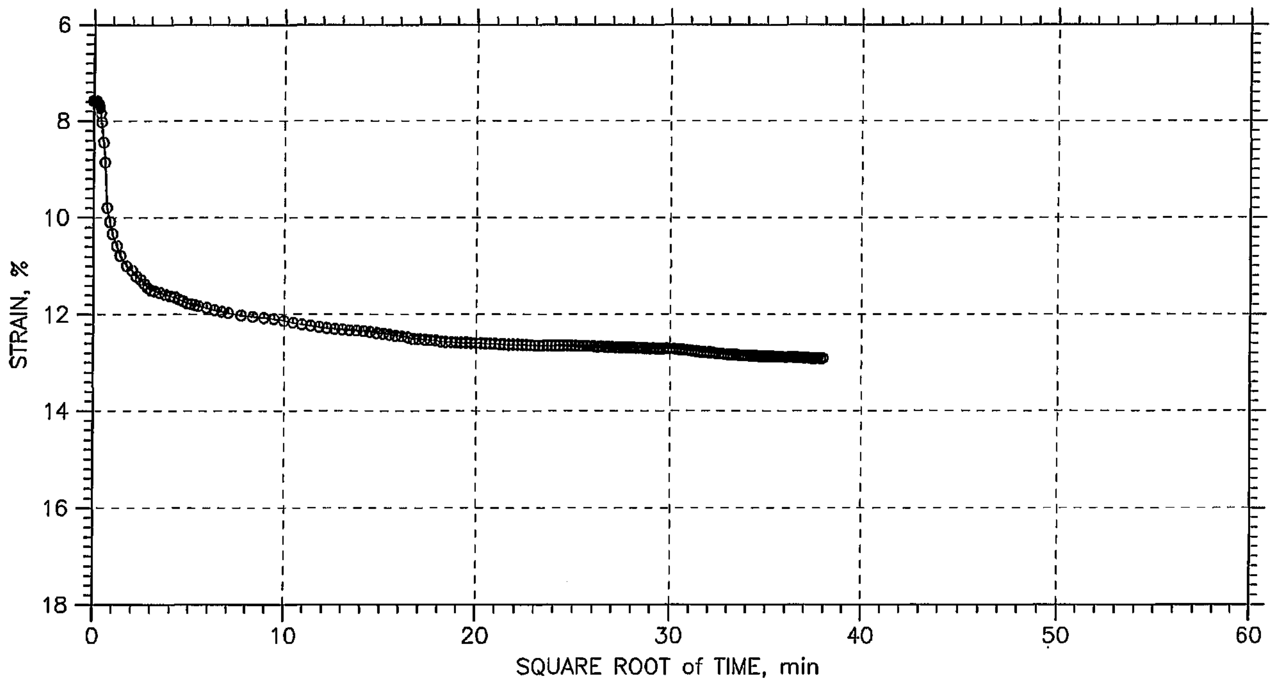
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

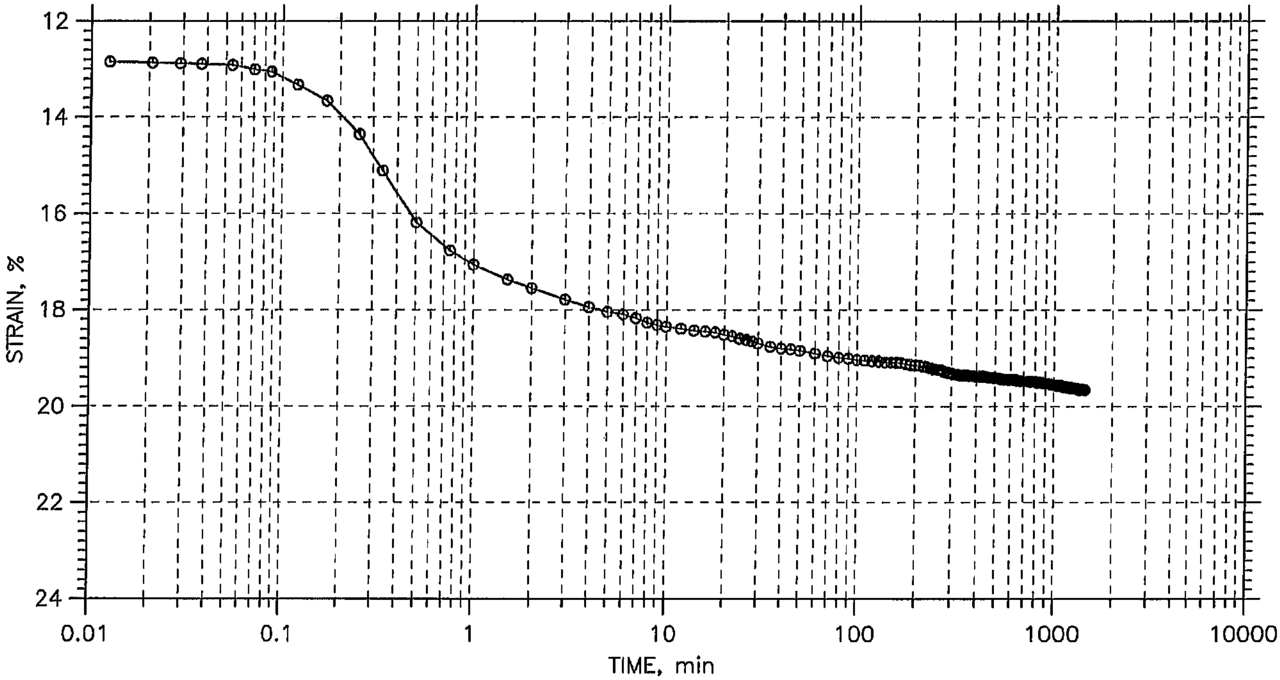
Mon, 16-JUL-2007 13:44:44

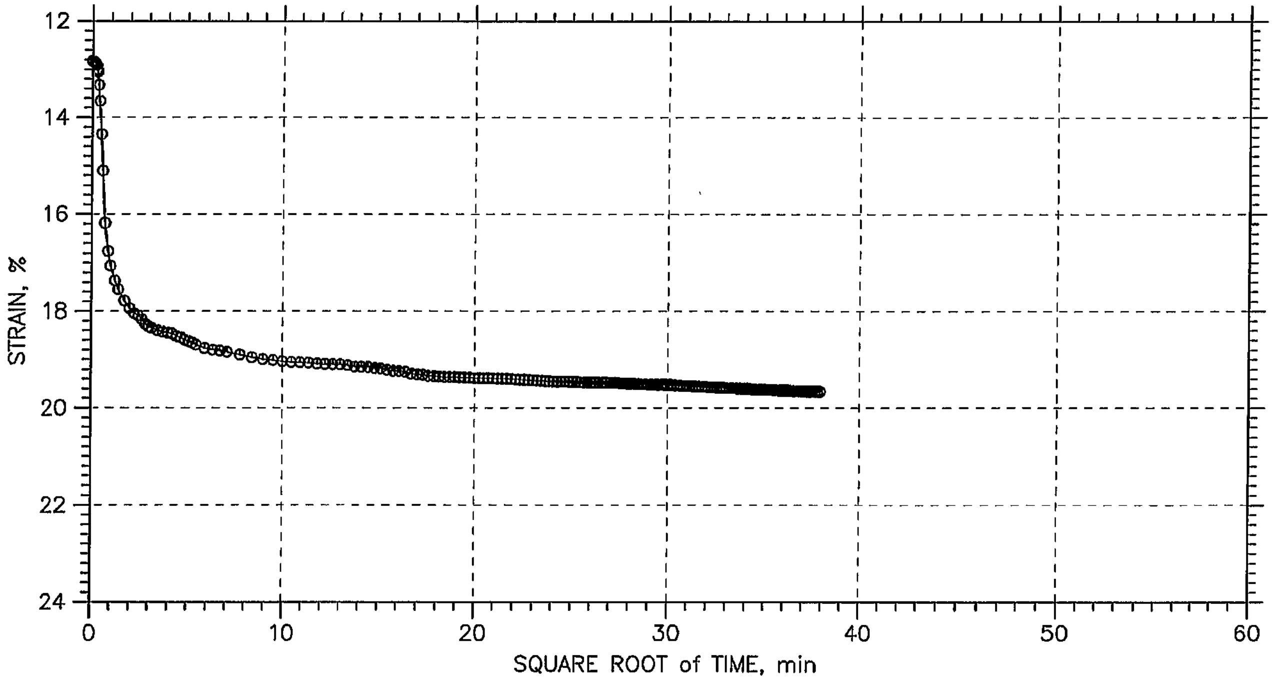
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf





GeoTesting express — a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

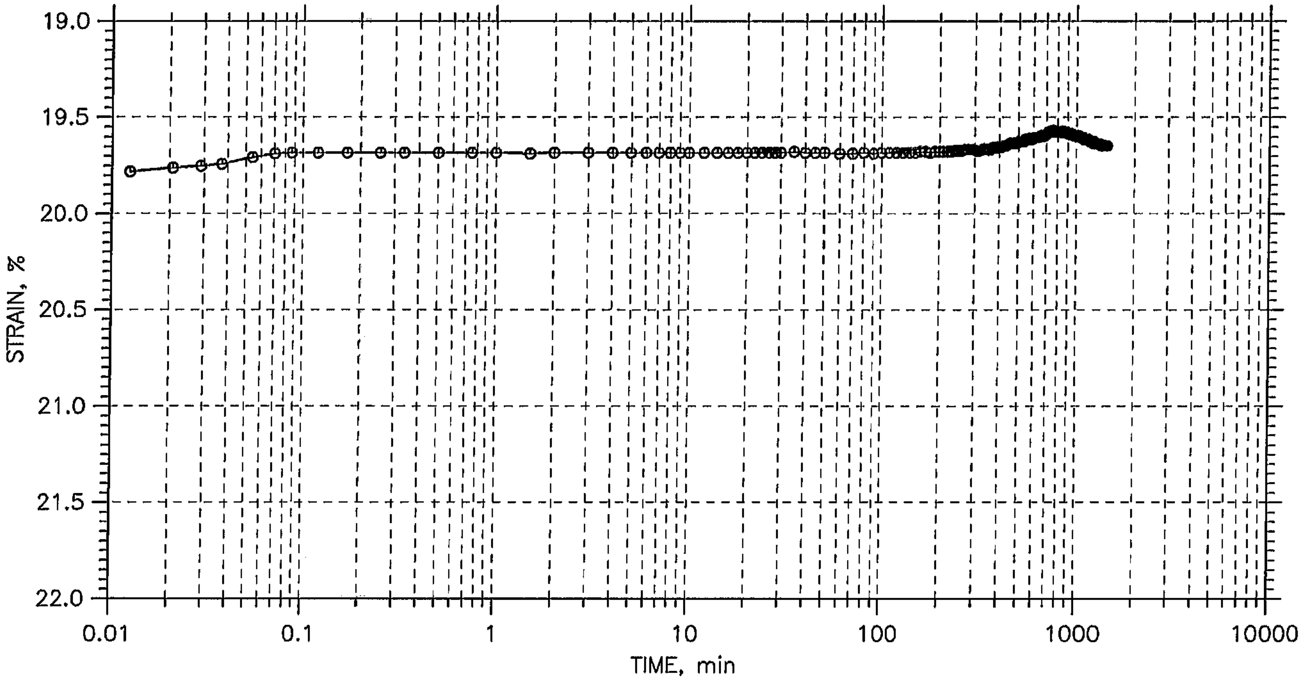
Mon, 16-JUL-2007 13:44:56

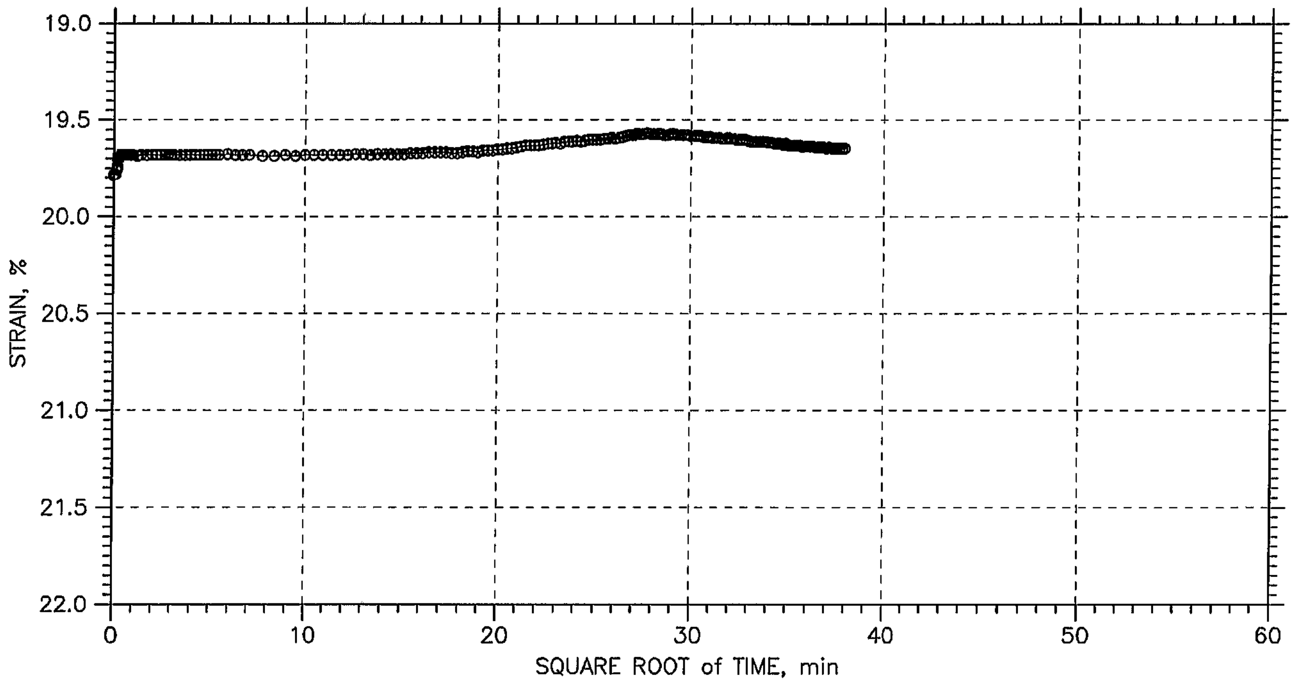
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 0.8 tsf





GeoTesting express, a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

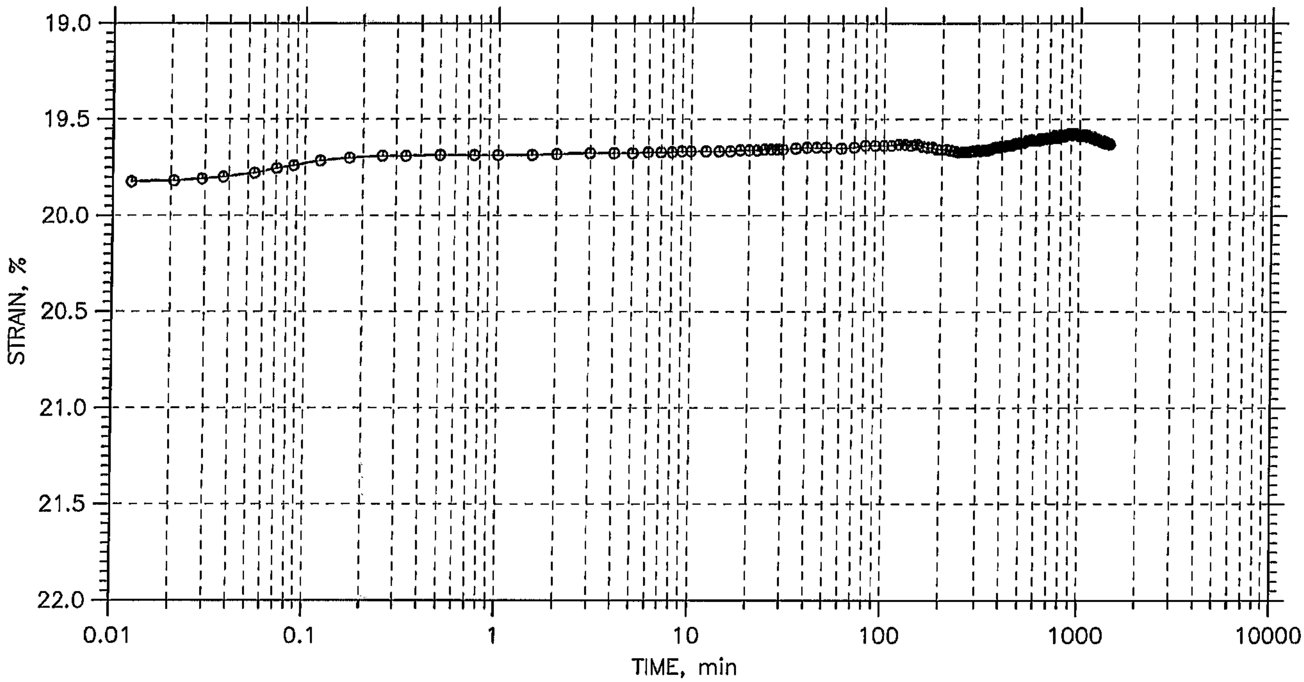
Mon, 16-JUL-2007 13:45:19

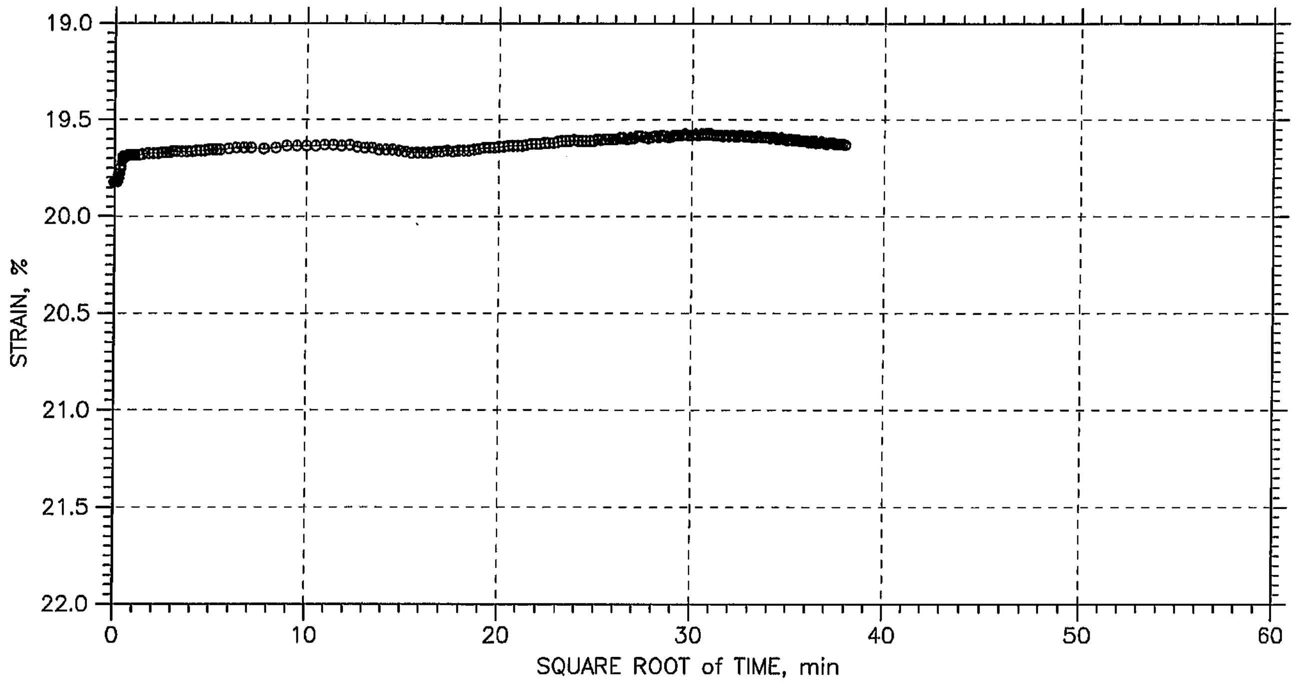
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 0.2 tsf





GeoTesting express (a subsidiary of Geocomp Corporation)	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

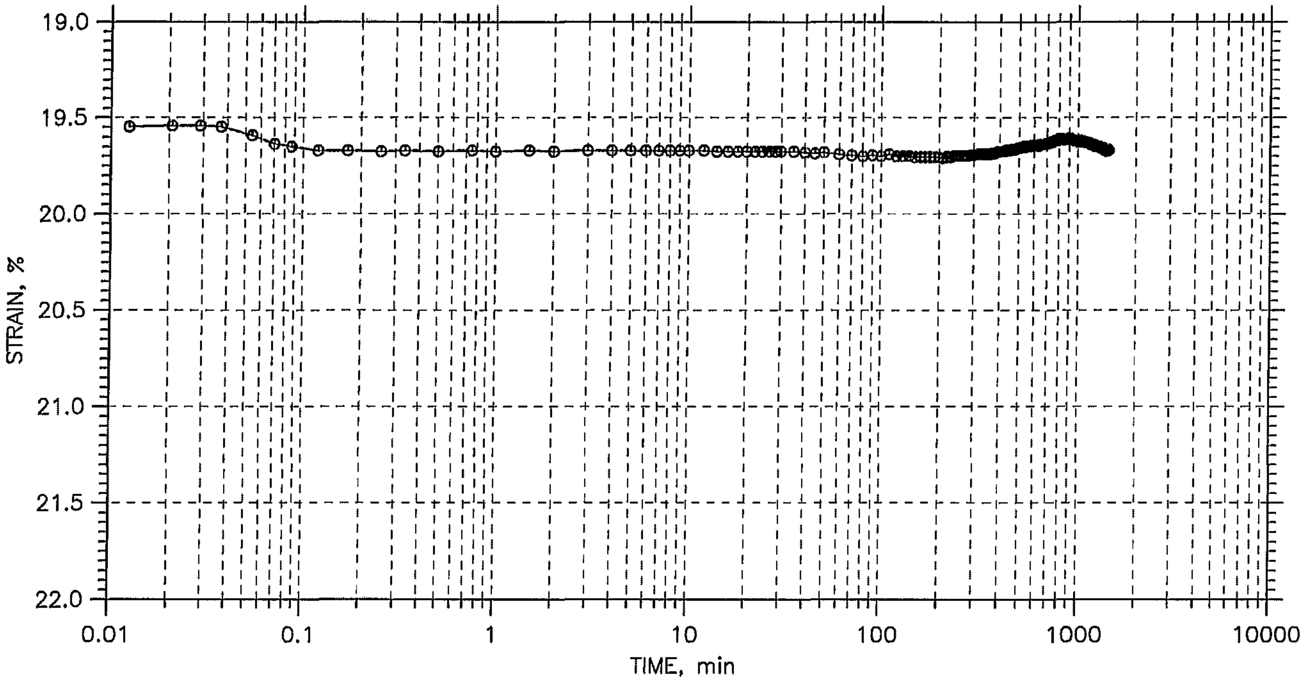
Mon, 16-JUL-2007 13:45:26

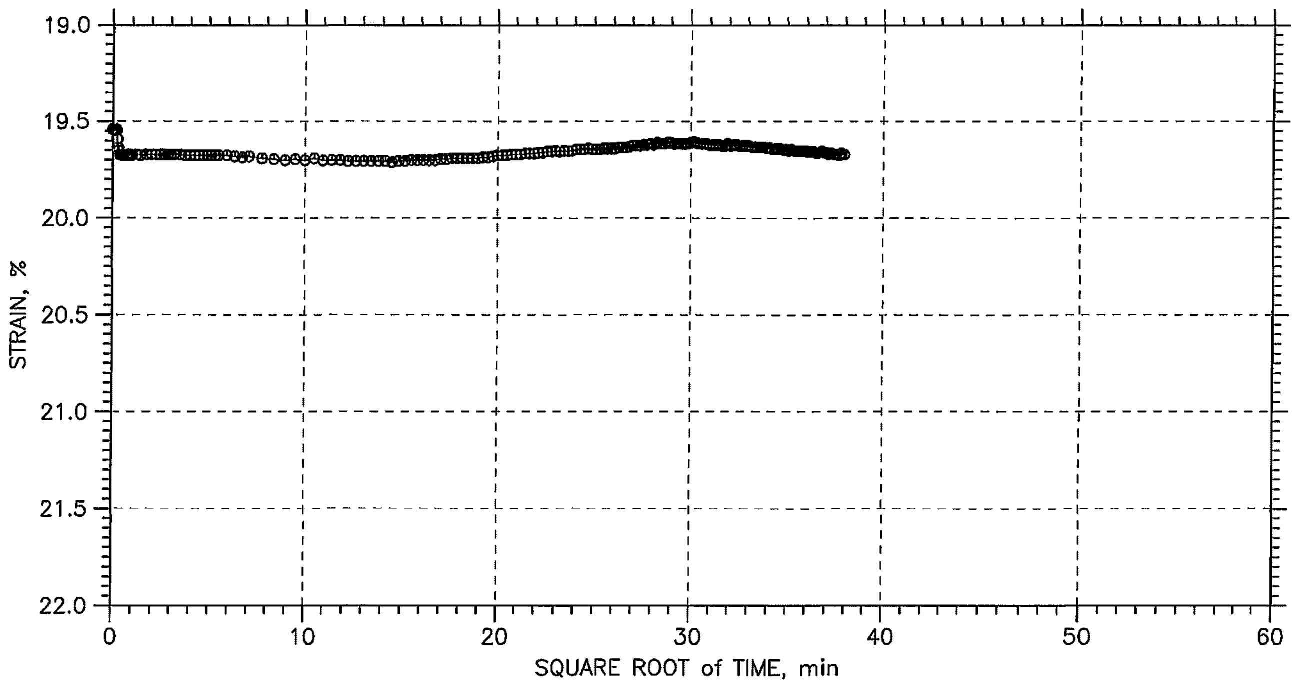
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

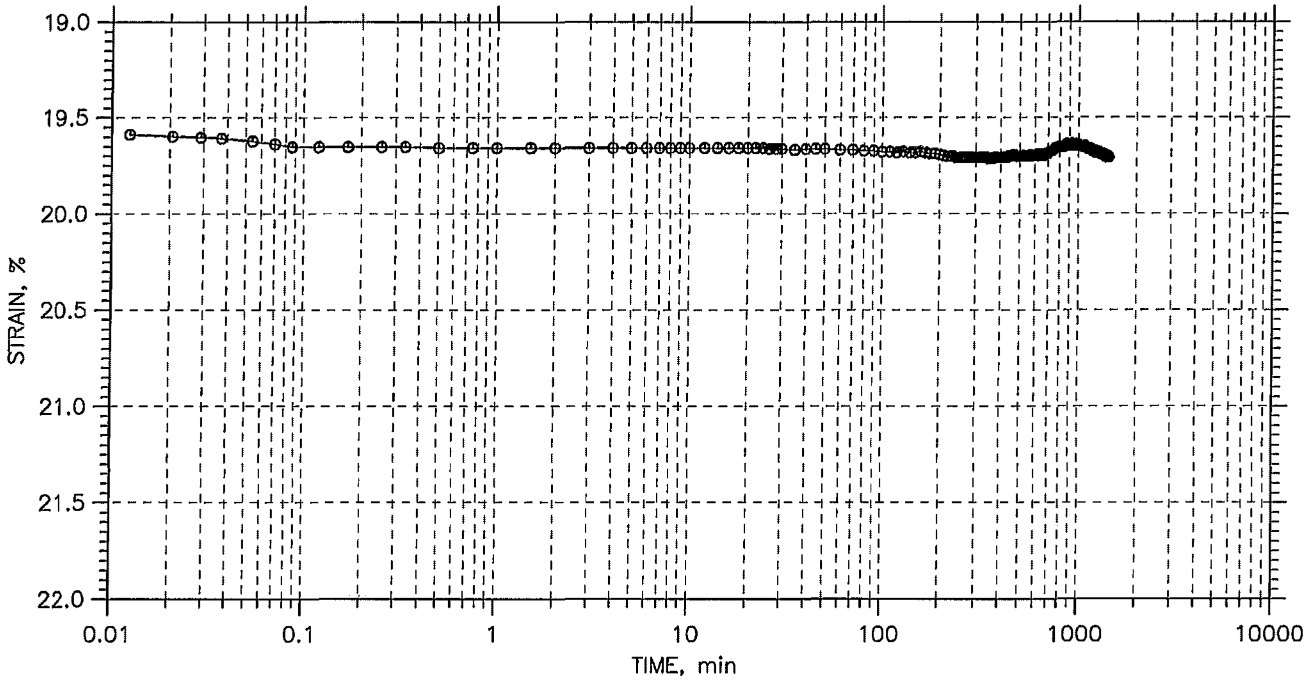
Mon, 16-JUL-2007 13:45:38

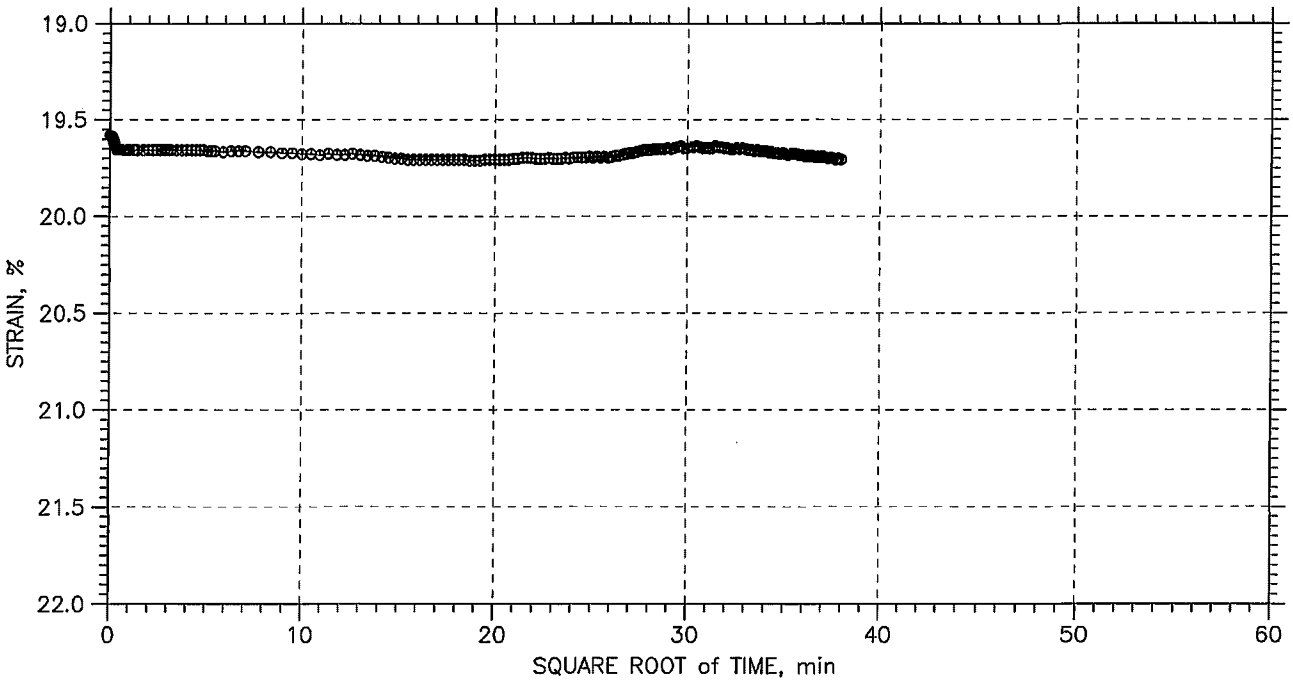
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

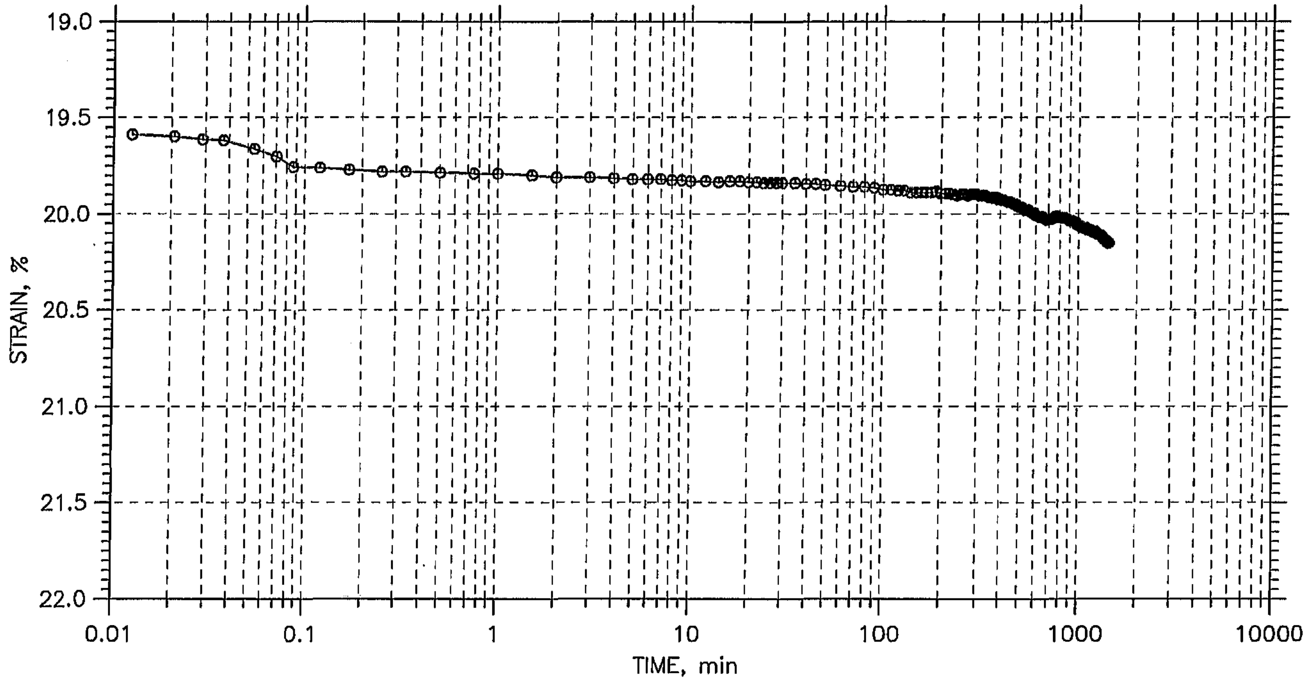
Mon, 16-JUL-2007 13:45:57

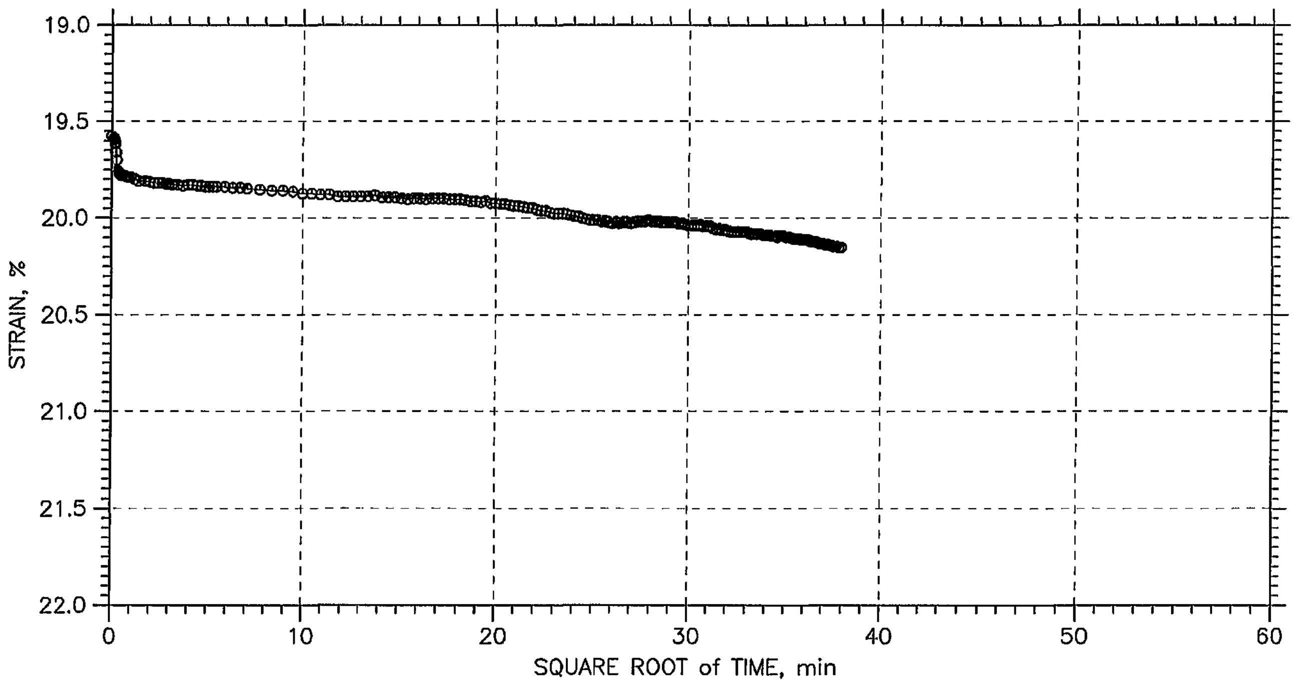
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

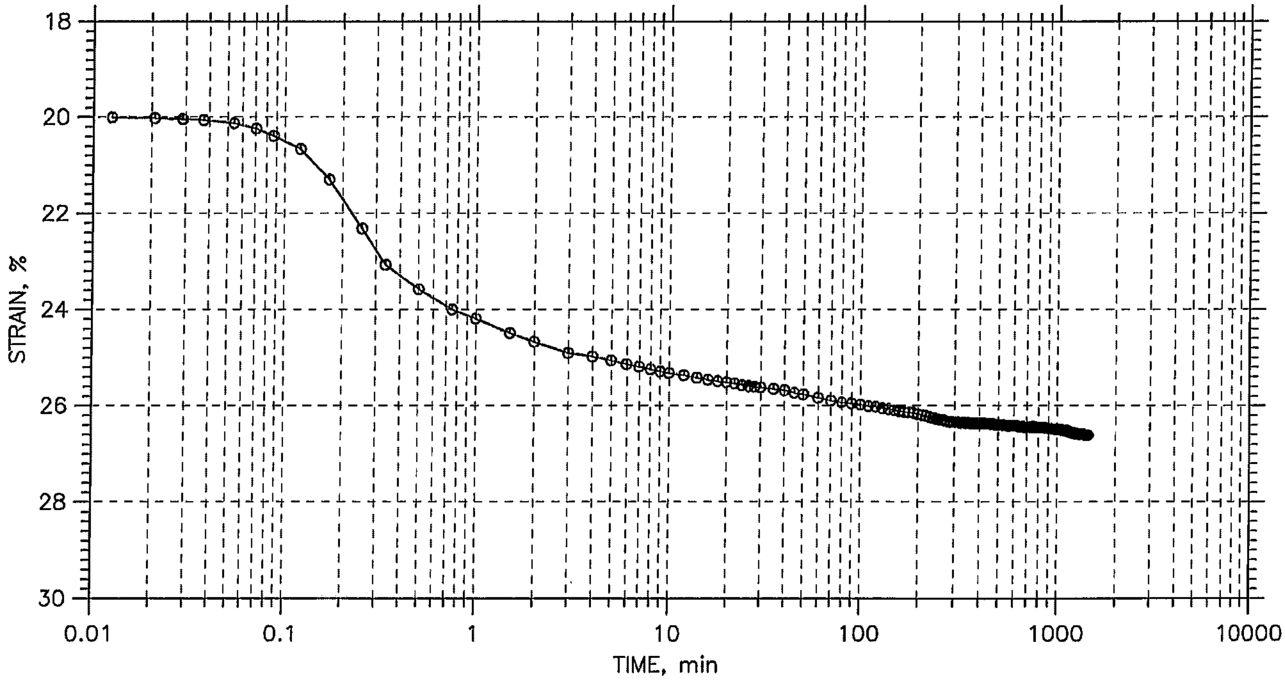
Mon, 16-JUL-2007 13:46:07

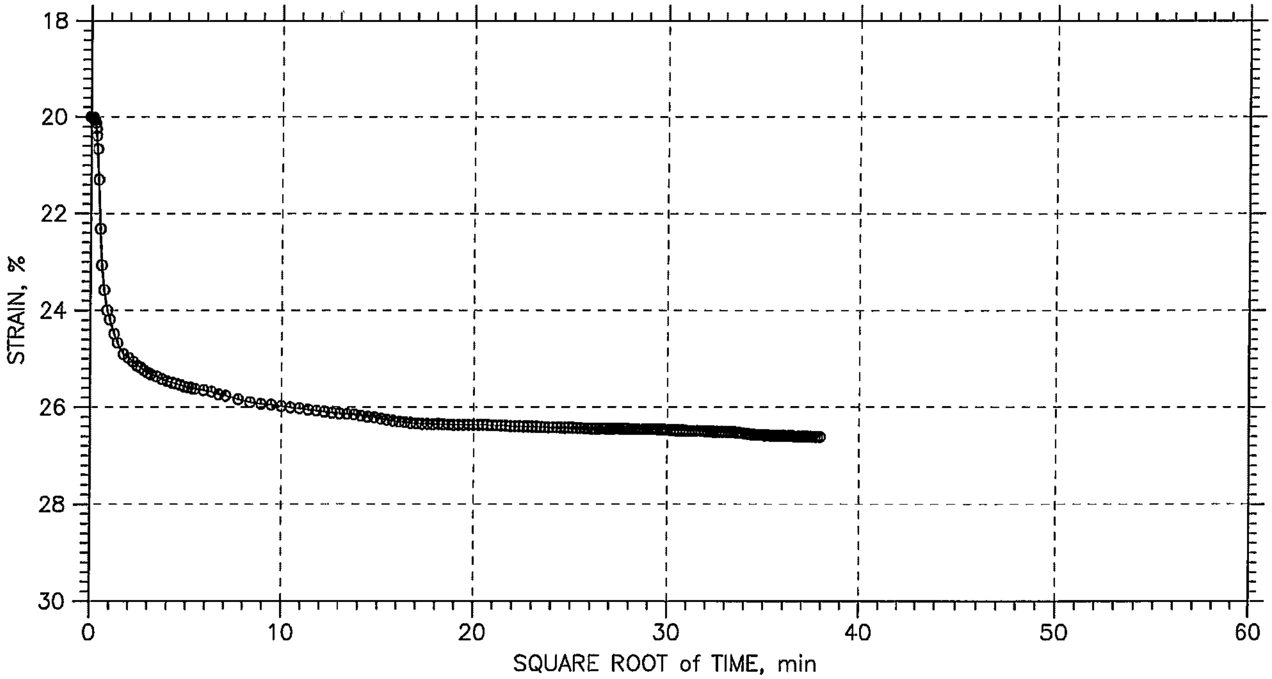
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

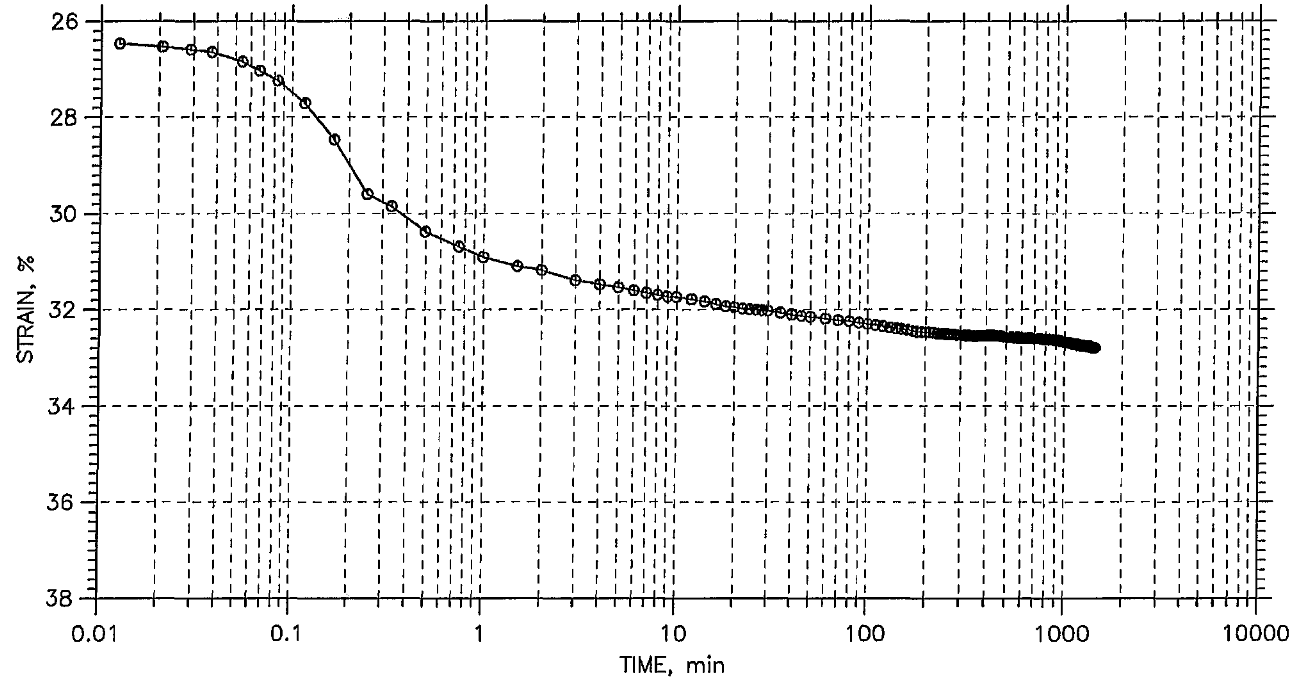
Mon, 16-JUL-2007 13:46:22

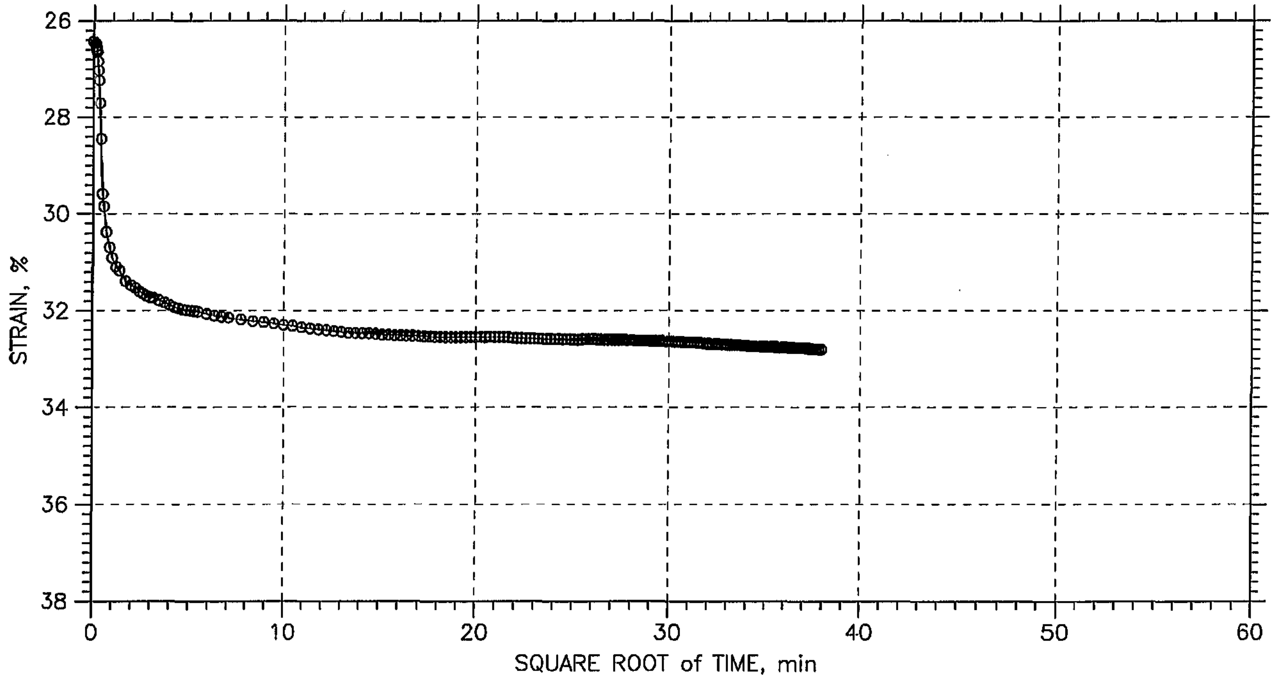
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

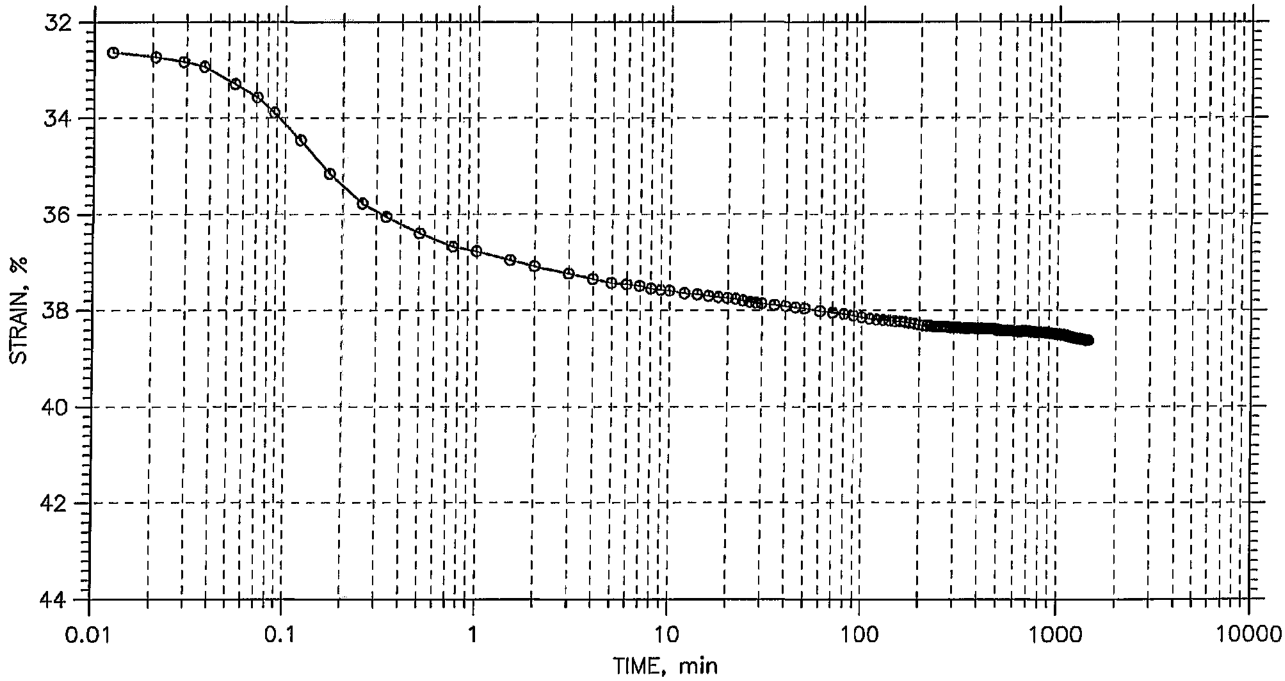
Mon, 16-JUL-2007 13:46:29

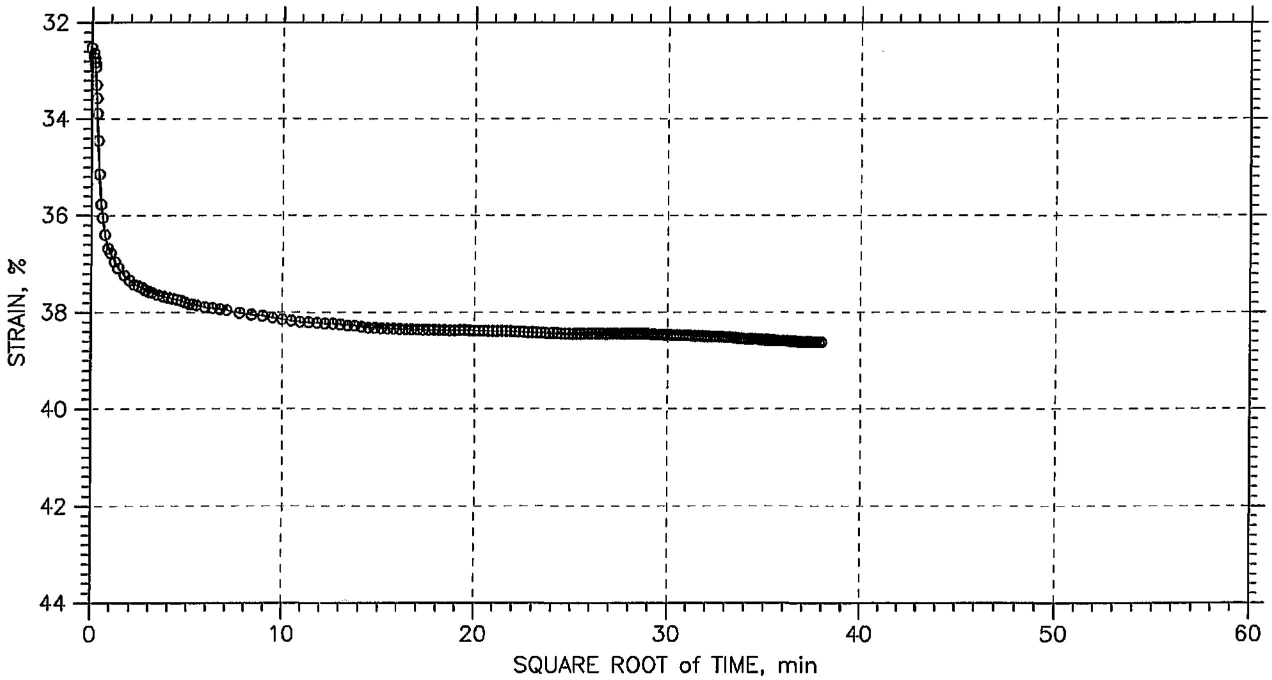
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

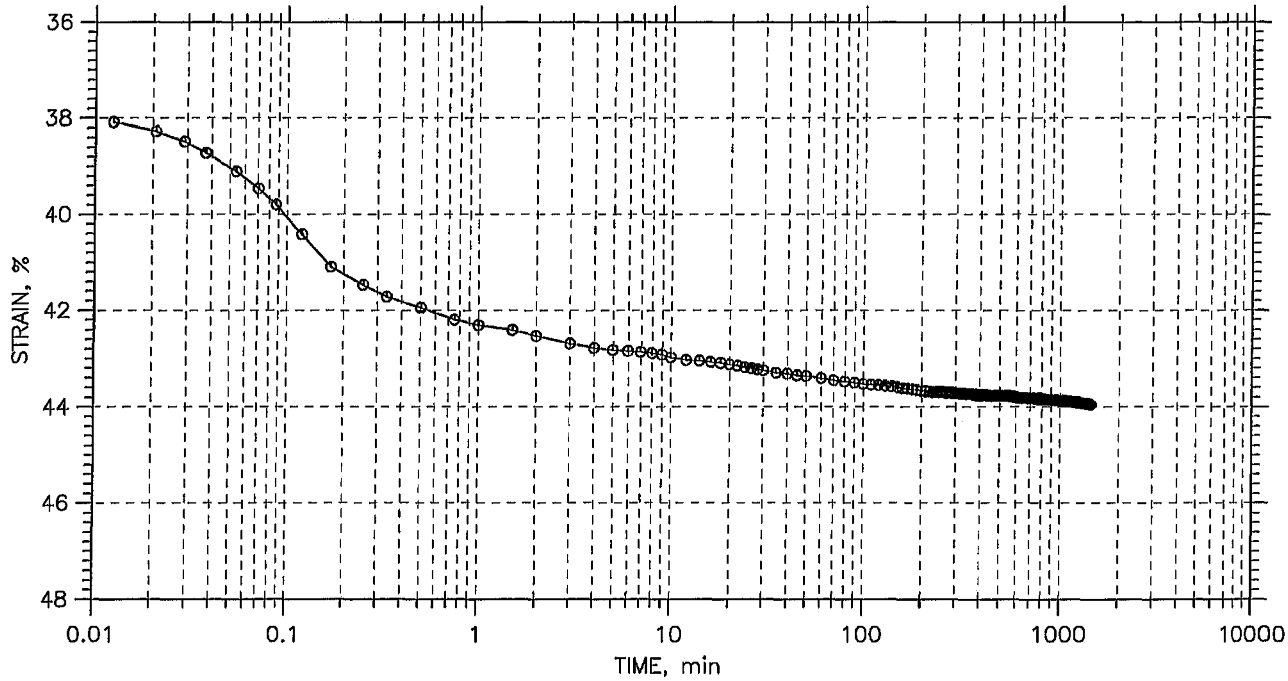
Mon, 16-JUL-2007 13:46:36

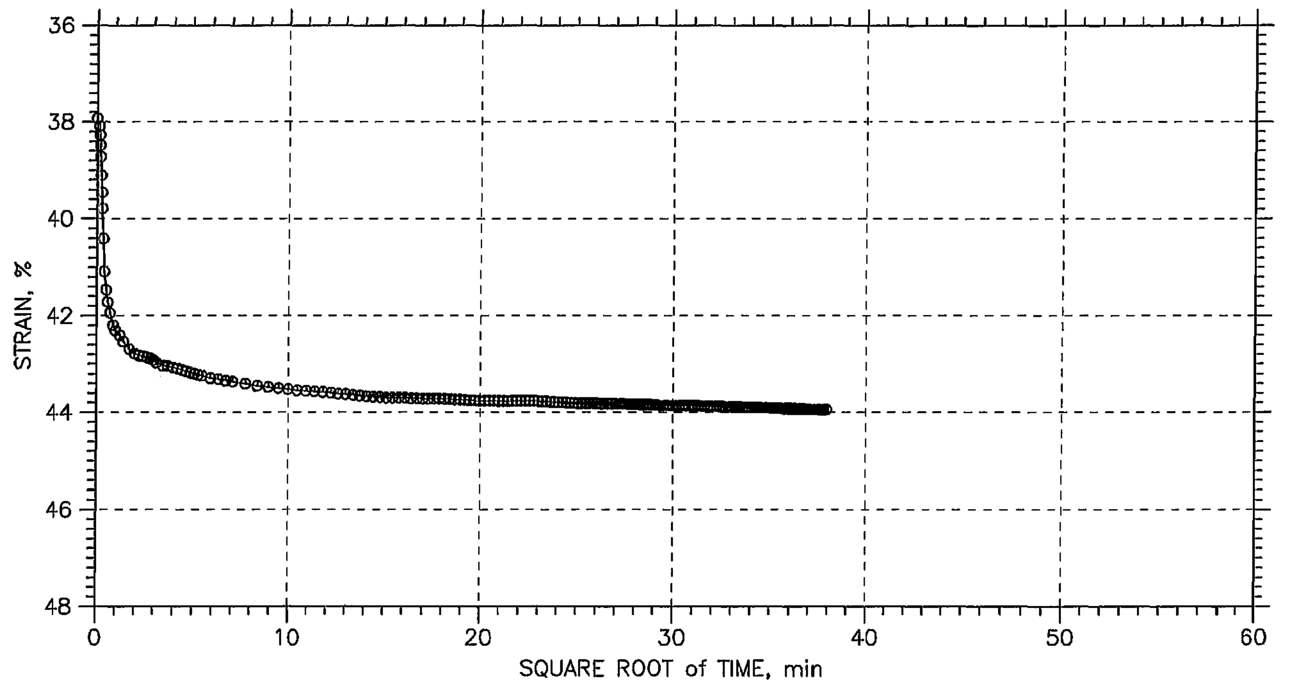
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

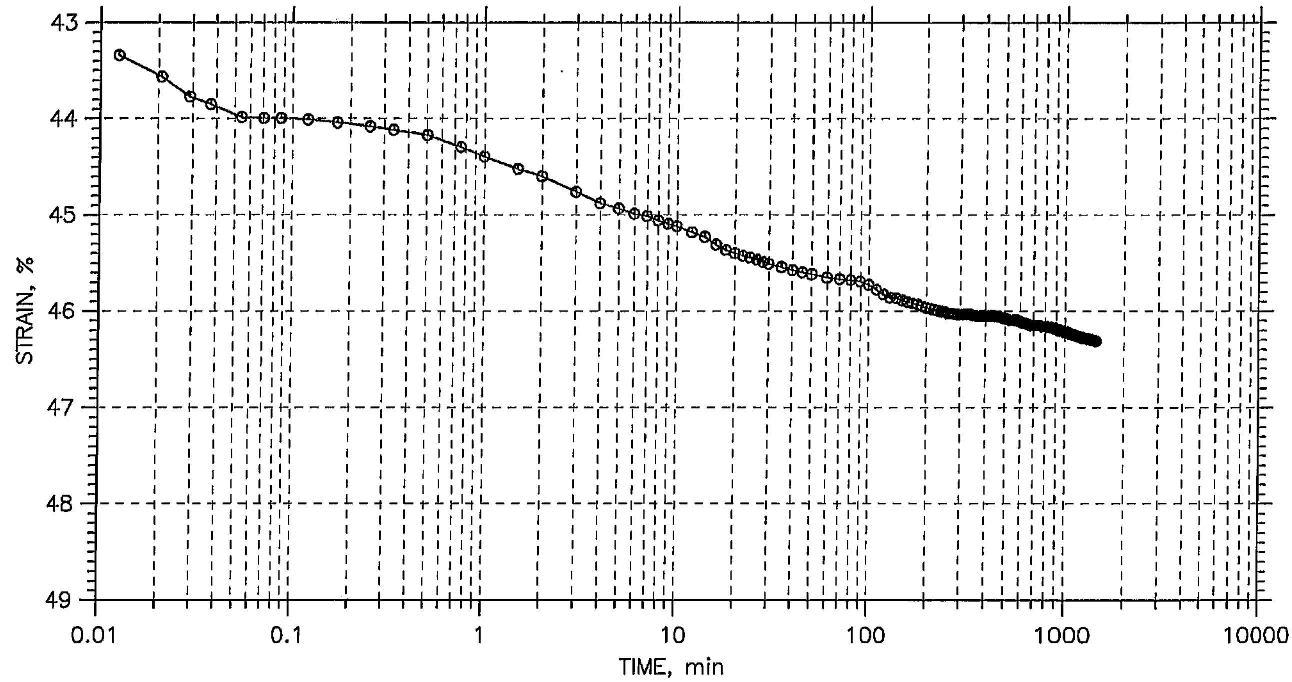
Mon, 16-JUL-2007 13:46:44

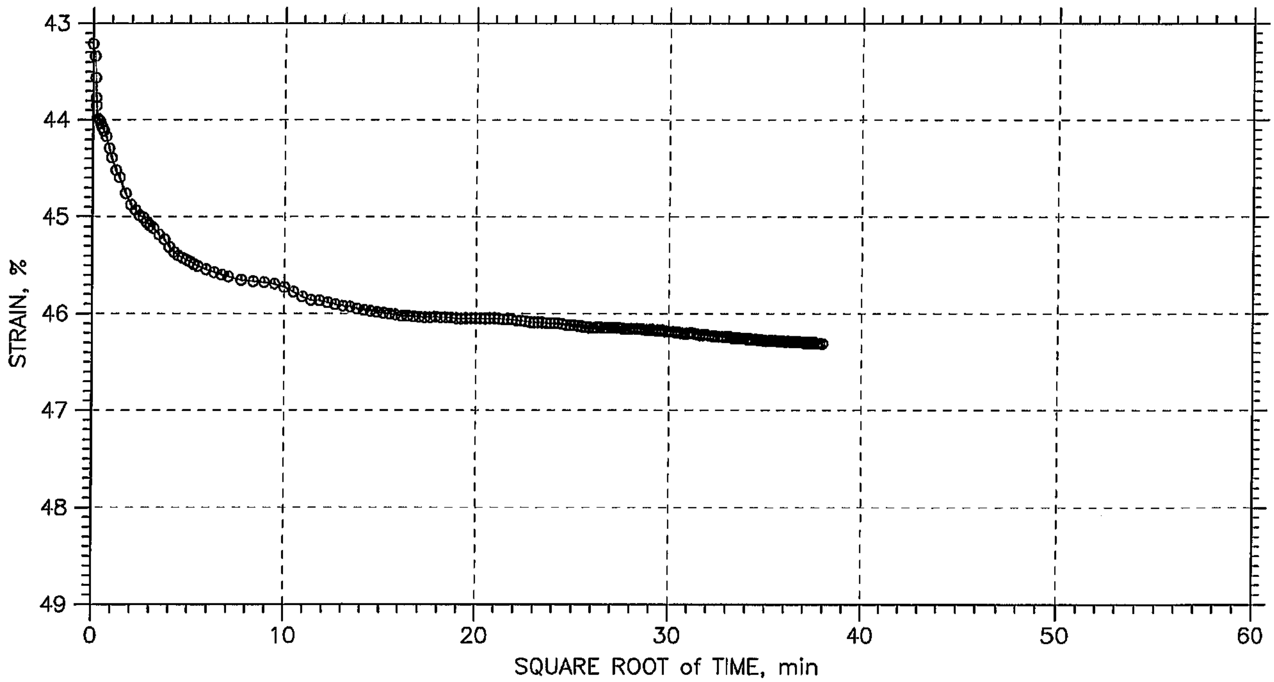
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

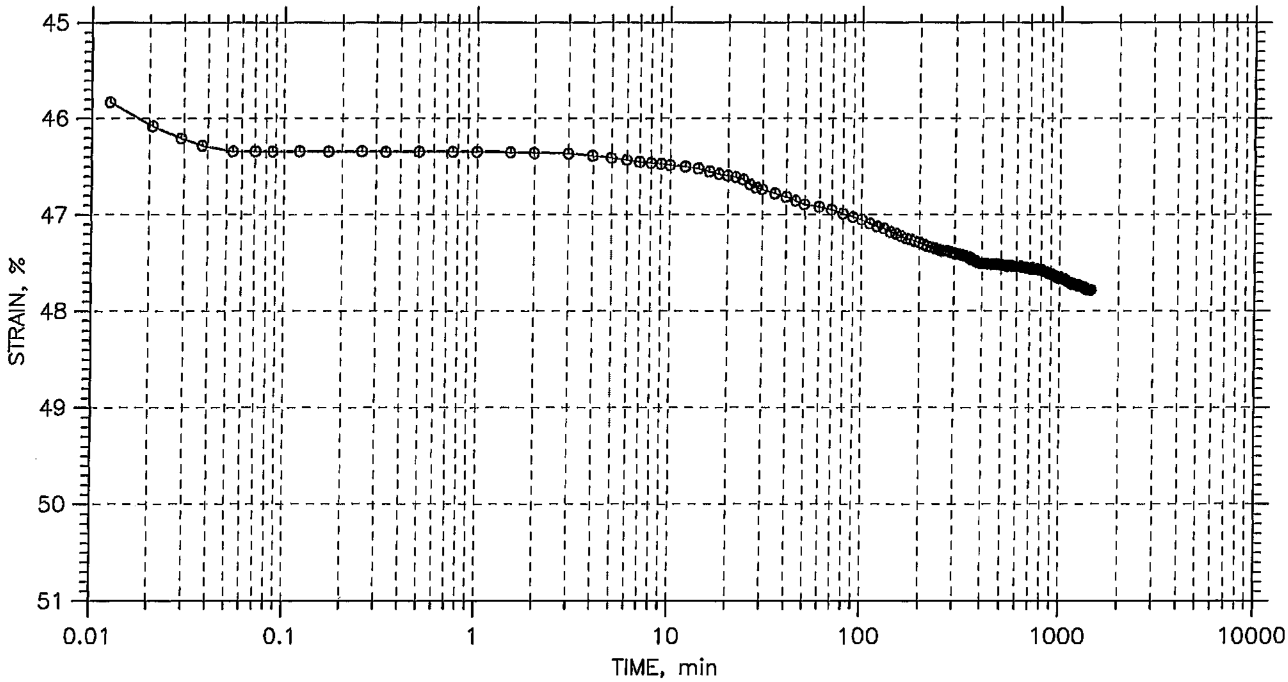
Mon, 16-JUL-2007 13:46:52

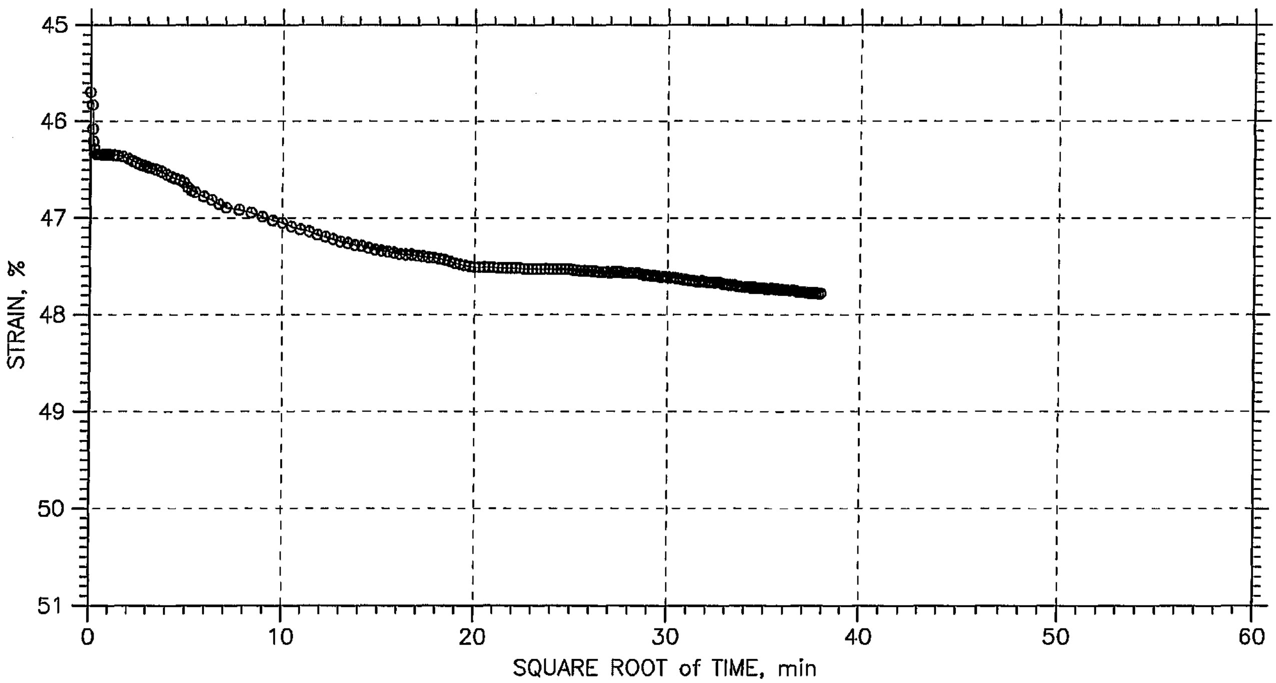
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

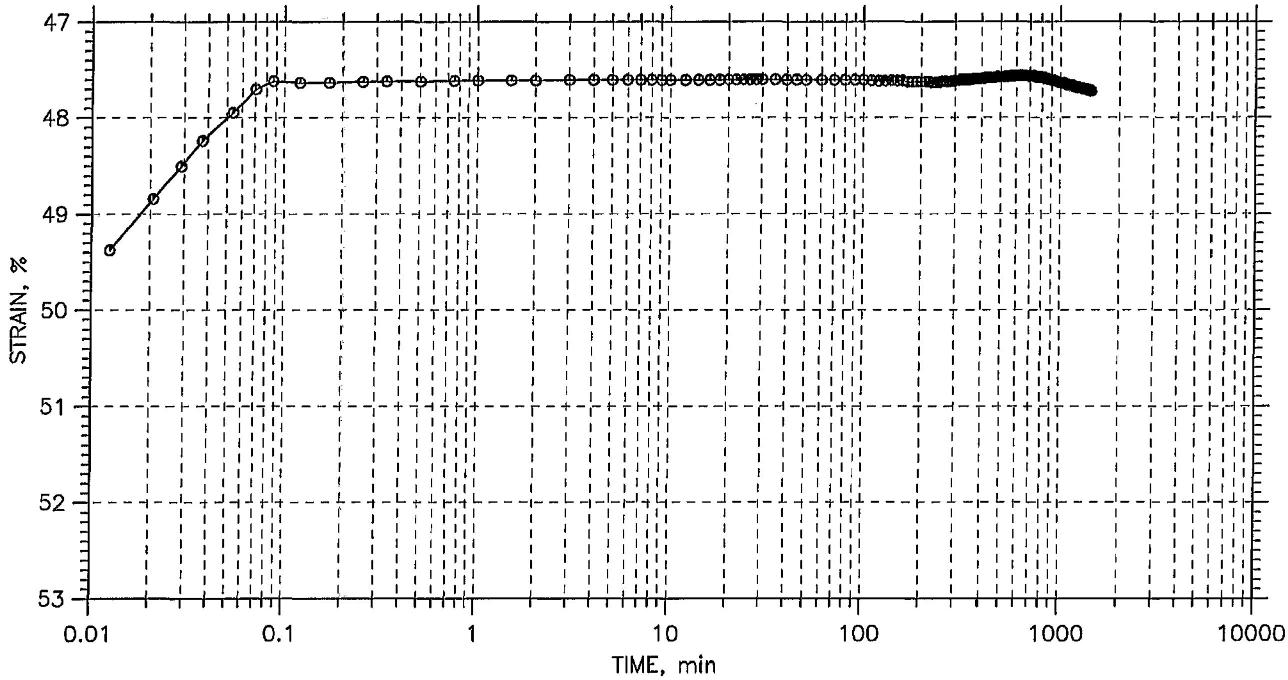
Mon, 16-JUL-2007 13:47:12

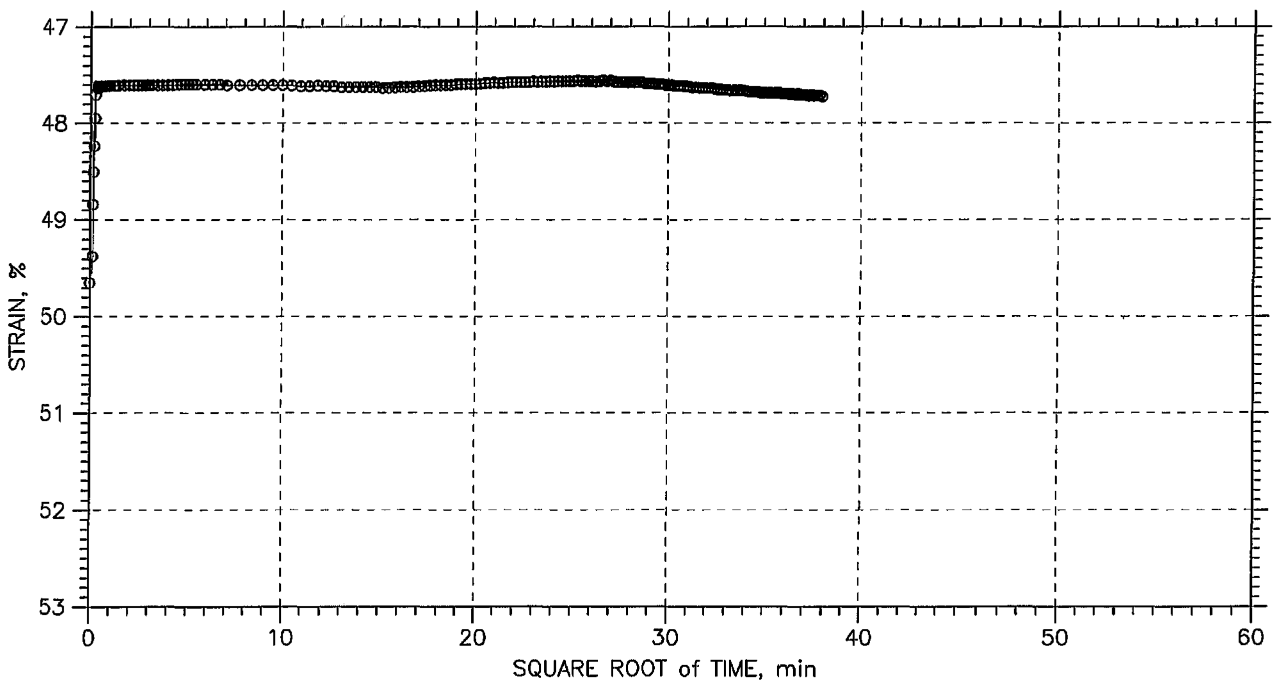
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

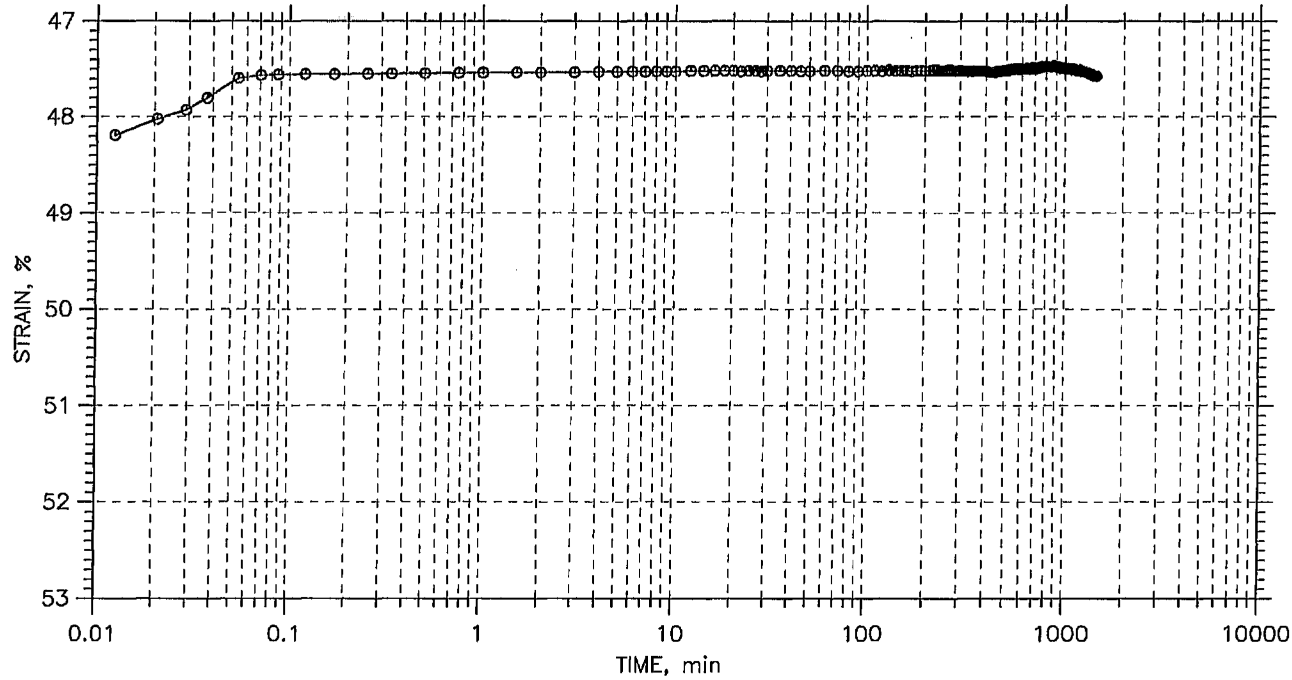
Mon, 16-JUL-2007 13:47:43

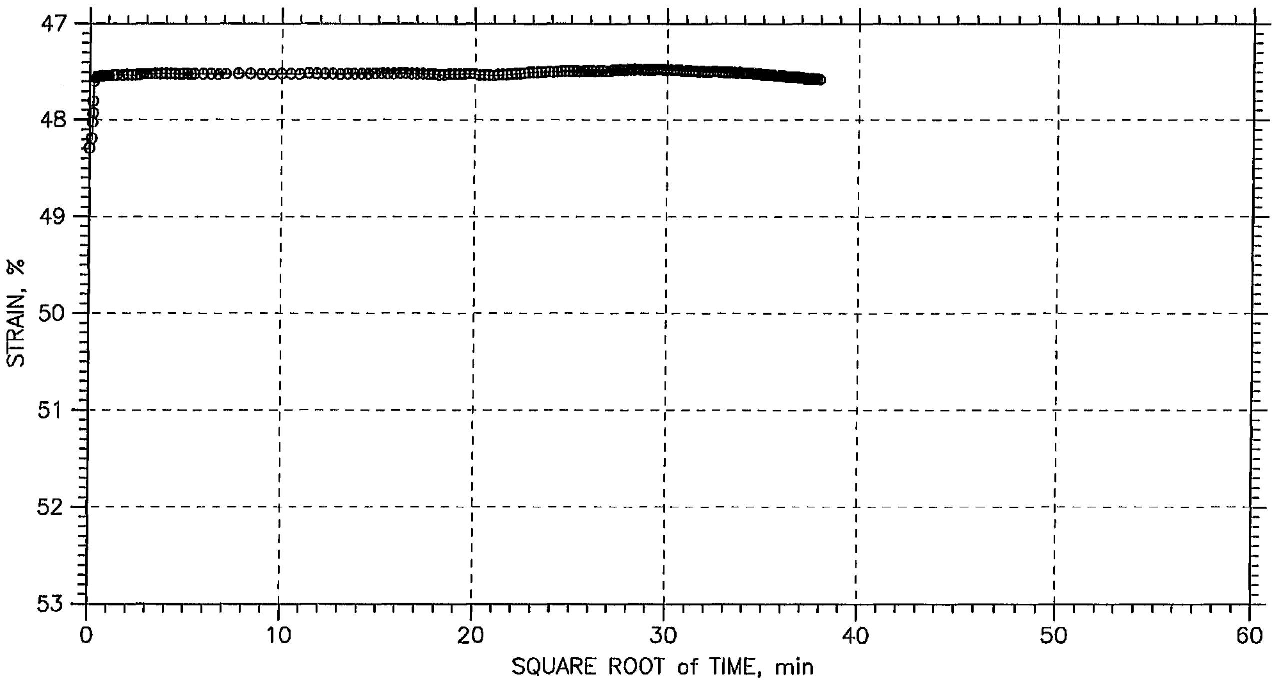
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

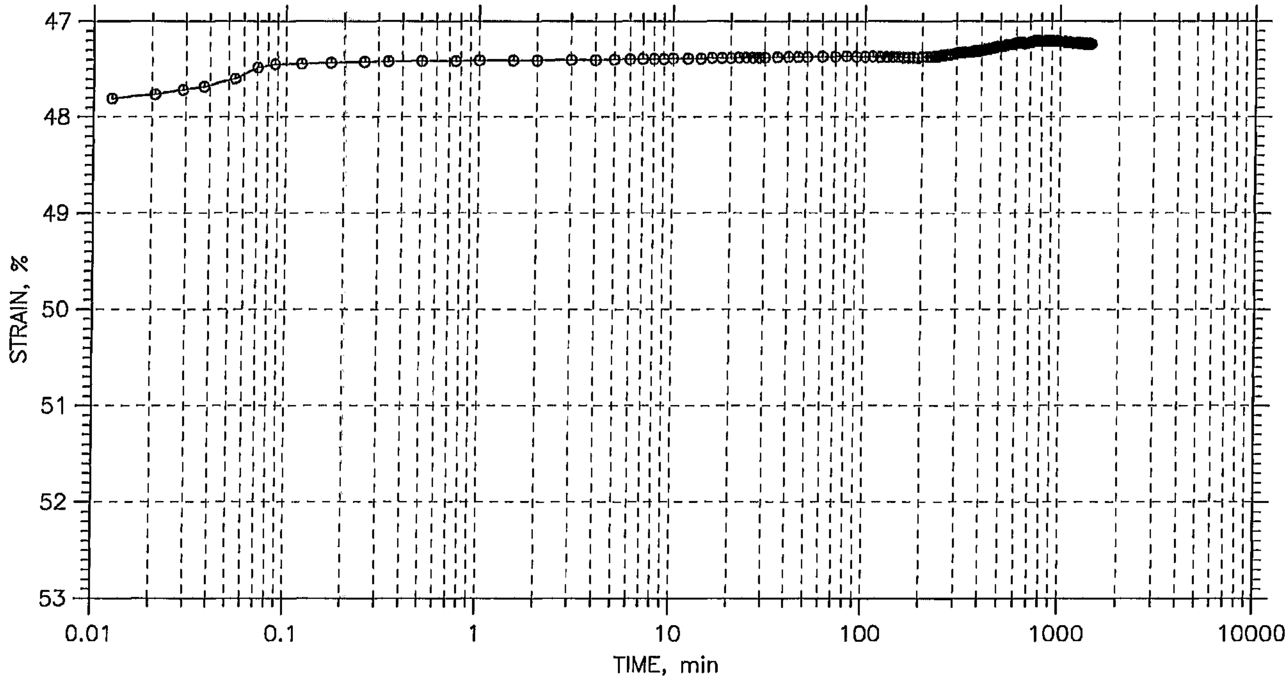
Mon, 16-JUL-2007 13:47:59

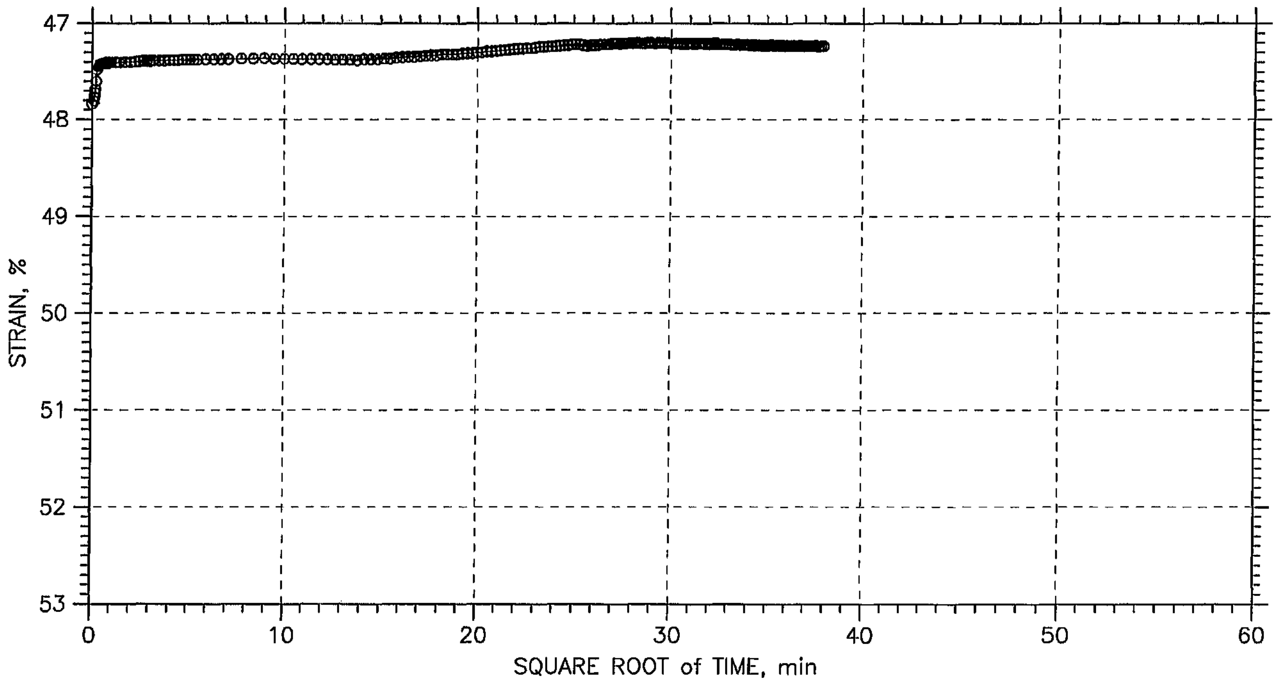
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf



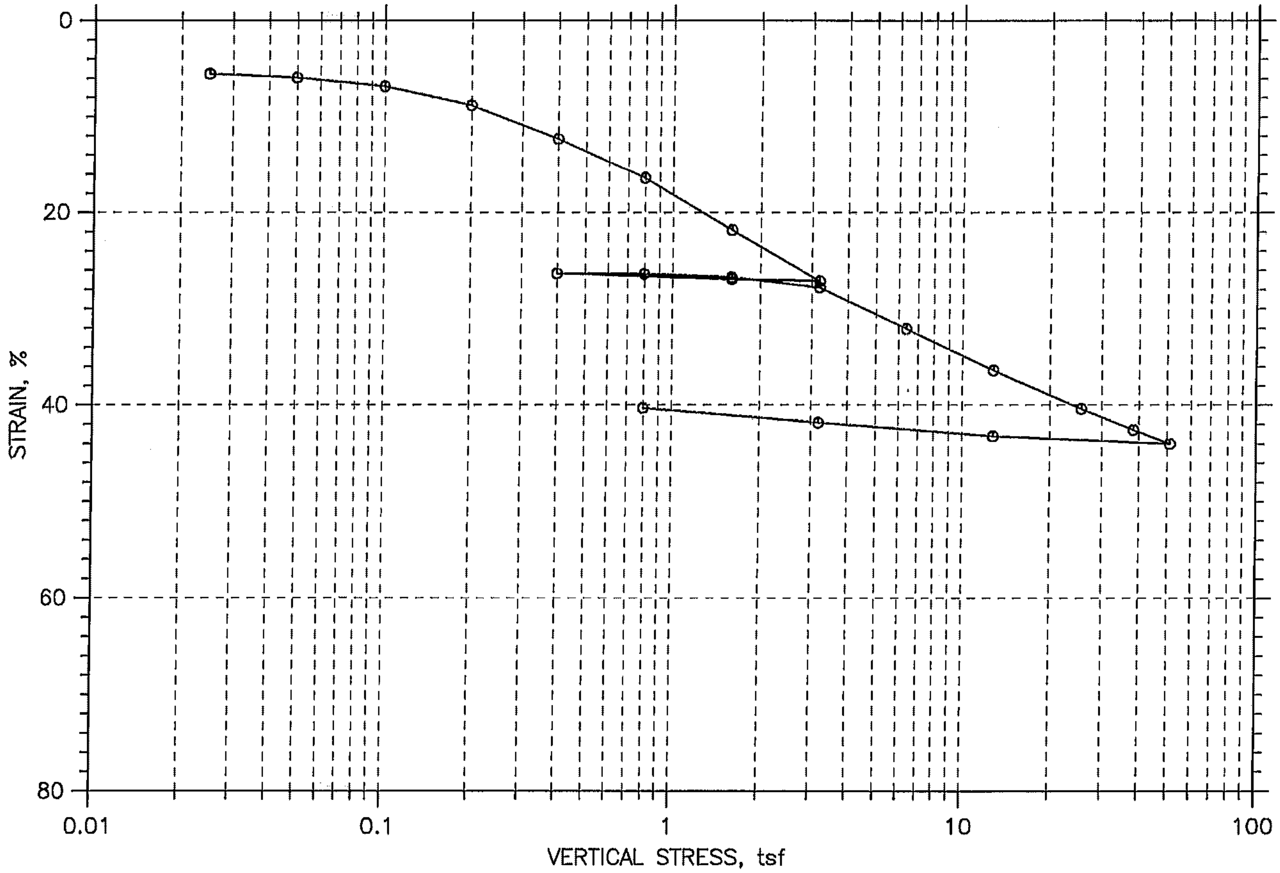


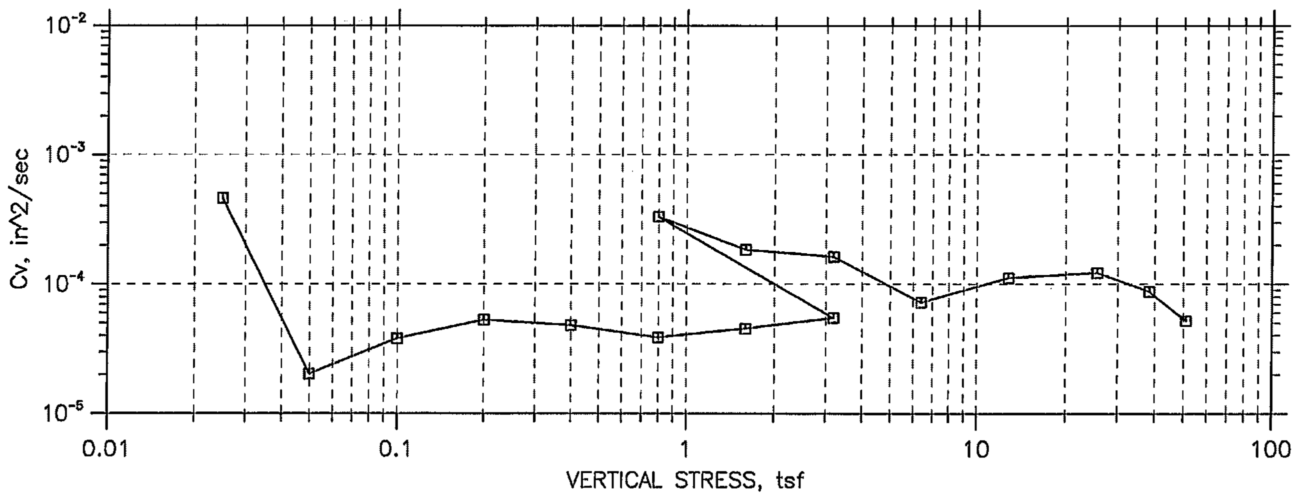
GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-14	Test Date: 06/14/07	Depth: 6-8 ft
	Test No.: C-33	Sample Type: tube	Elevation: ---
	Description: Moist, light gray silt		
	Remarks: System Q		

Mon, 16-JUL-2007 13:48:10

CONSOLIDATION TEST DATA

SUMMARY REPORT



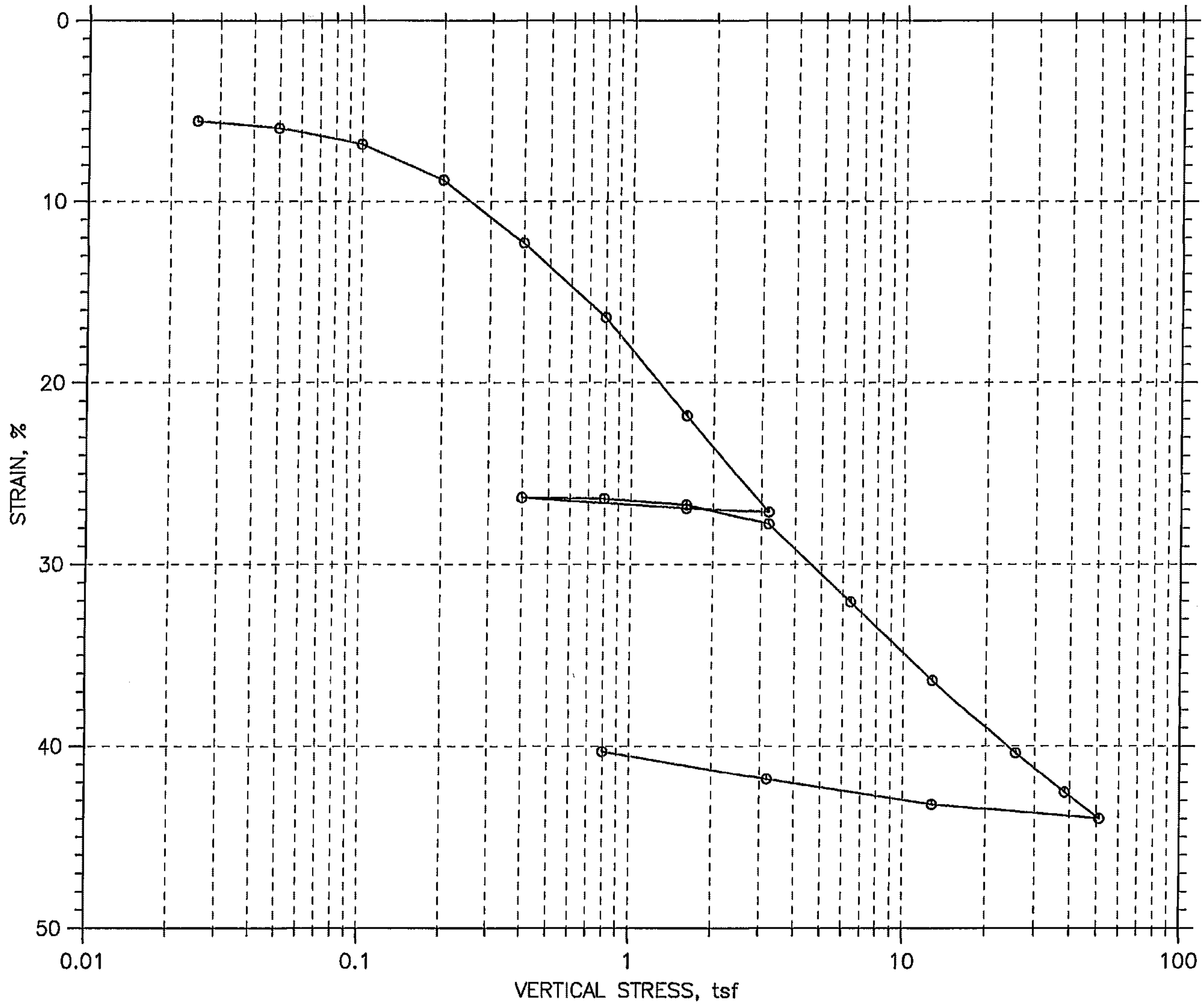


GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

Tue, 17-JUL-2007 08:44:20

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	54.65	21.88
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	72.76	121.8
Compression Index: ---				Saturation, %	96.82	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	1.92	0.75
LL: ---	PL: ---	PI: ---	GS: 3.41			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

Tue, 17-JUL-2007 08:44:22

CONSOLIDATION TEST DATA

Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
Boring No.: 20034	Tested By: md	Checked By: jdt
Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
Test No.: C-34	Sample Type: tube	Elevation: ---

Soil Description: Moist, brown silt
Remarks: System T

Estimated Specific Gravity: 3.41	Liquid Limit: ---	Initial Height: 1.00 in
Initial Void Ratio: 1.92	Plastic Limit: ---	Specimen Diameter: 2.50 in
Final Void Ratio: 0.75	Plasticity Index: ---	

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	2754	RING		halloween
Wt. Container + Wet Soil, gm	241.63	254.09	223.37	122.04
Wt. Container + Dry Soil, gm	200.82	202.86	202.86	101.58
Wt. Container, gm	102.64	109.11	109.11	8.07
Wt. Dry Soil, gm	98.18	93.748	93.748	93.51
Water Content, %	41.57	54.65	21.88	21.88
Void Ratio	---	1.92	0.75	---
Degree of Saturation, %	---	96.82	100.00	---
Dry Unit Weight, pcf	---	72.756	121.83	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20034
Sample No.: 0317-15
Test No.: C-34

Location: Syracuse NY
Tested By: md
Test Date: 06/14/2007
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 42-44 ft
Elevation: ---

Soil Description: Moist, brown silt
Remarks: System T

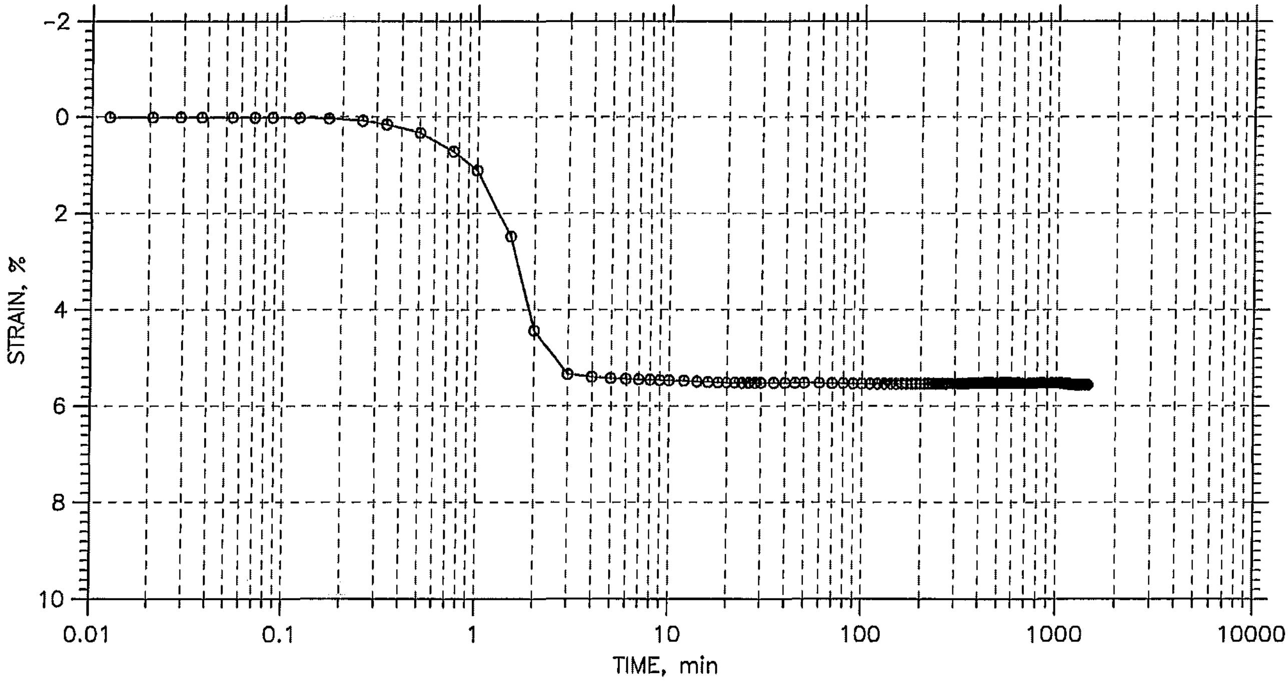
	Applied Stress	Final Displacement	Void Ratio	Strain at End	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt.	Log	Sq.Rt.	Log	Ave.
	tsf	in		%	min	min	in^2/sec	in^2/sec	in^2/sec
1	0.025	0.05559	1.760	5.56	1.7	0.0	4.62e-004	0.00e+000	4.62e-004
2	0.05	0.05947	1.749	5.95	36.0	0.0	2.03e-005	0.00e+000	2.03e-005
3	0.1	0.06844	1.722	6.84	19.0	0.0	3.80e-005	0.00e+000	3.80e-005
4	0.2	0.08809	1.665	8.81	12.7	13.6	5.50e-005	5.13e-005	5.31e-005
5	0.4	0.123	1.563	12.30	13.7	0.0	4.81e-005	0.00e+000	4.81e-005
6	0.8	0.1638	1.444	16.38	13.8	17.4	4.38e-005	3.47e-005	3.87e-005
7	1.6	0.2181	1.285	21.81	10.5	13.3	5.14e-005	4.05e-005	4.53e-005
8	3.2	0.2712	1.130	27.12	6.9	10.2	6.82e-005	4.60e-005	5.49e-005
9	1.6	0.2691	1.136	26.91	1.0	0.0	4.57e-004	0.00e+000	4.57e-004
10	0.4	0.2633	1.153	26.33	2.3	0.0	1.92e-004	0.00e+000	1.92e-004
11	0.8	0.2638	1.152	26.38	1.3	0.0	3.32e-004	0.00e+000	3.32e-004
12	1.6	0.2672	1.141	26.72	2.4	0.0	1.84e-004	0.00e+000	1.84e-004
13	3.2	0.2777	1.111	27.77	2.7	0.0	1.63e-004	0.00e+000	1.63e-004
14	6.4	0.3206	0.986	32.06	4.8	6.5	8.49e-005	6.26e-005	7.21e-005
15	12.8	0.3637	0.860	36.37	3.2	0.0	1.12e-004	0.00e+000	1.12e-004
16	25.6	0.4037	0.743	40.37	2.6	0.0	1.22e-004	0.00e+000	1.22e-004
17	38.4	0.4255	0.679	42.55	3.2	0.0	8.74e-005	0.00e+000	8.74e-005
18	51.2	0.44	0.636	44.00	5.1	0.0	5.21e-005	0.00e+000	5.21e-005
19	12.8	0.4321	0.660	43.21	0.2	0.0	1.21e-003	0.00e+000	1.21e-003
20	3.2	0.4182	0.700	41.82	2.7	0.0	1.01e-004	0.00e+000	1.01e-004
21	0.8	0.4028	0.745	40.28	7.9	0.0	3.63e-005	0.00e+000	3.63e-005

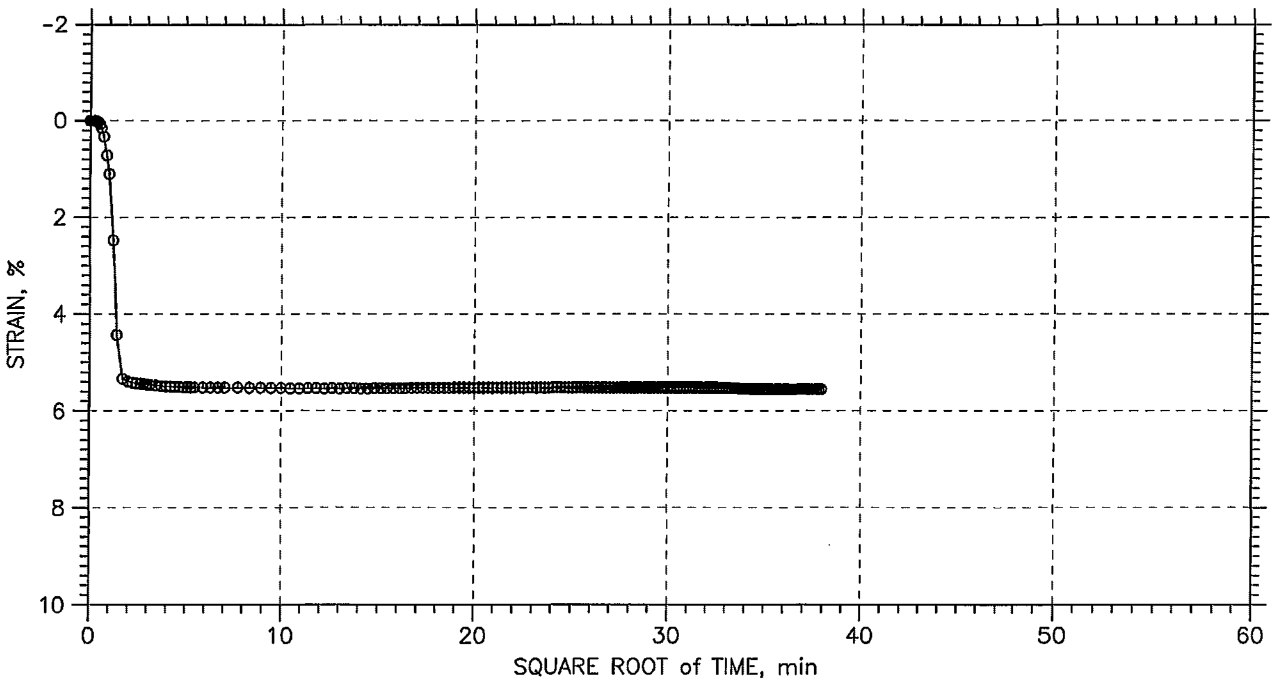
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express — a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

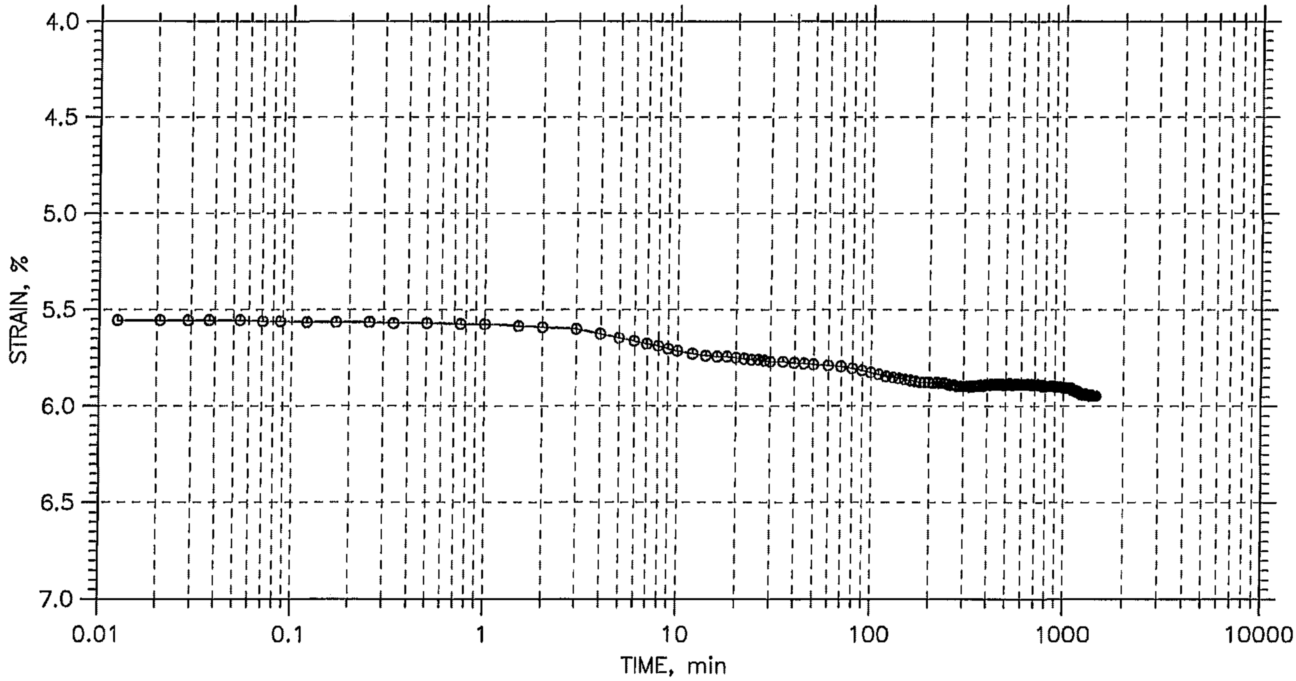
Tue, 17-JUL-2007 08:44:41

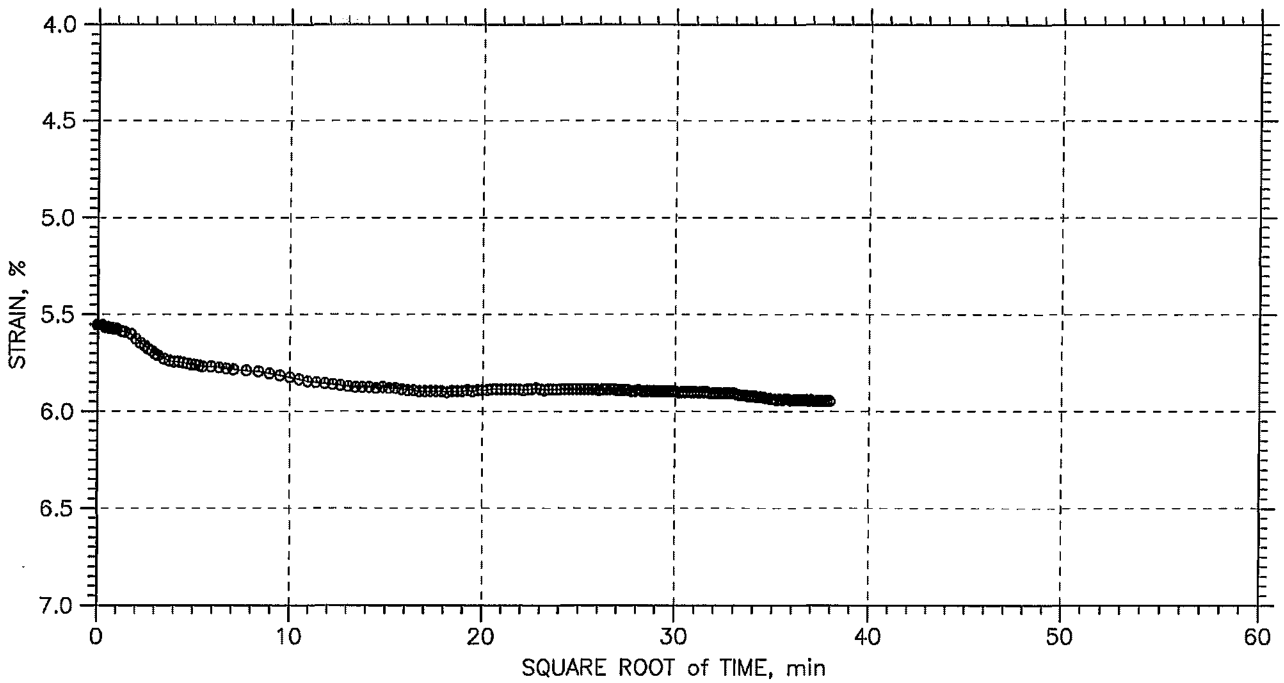
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

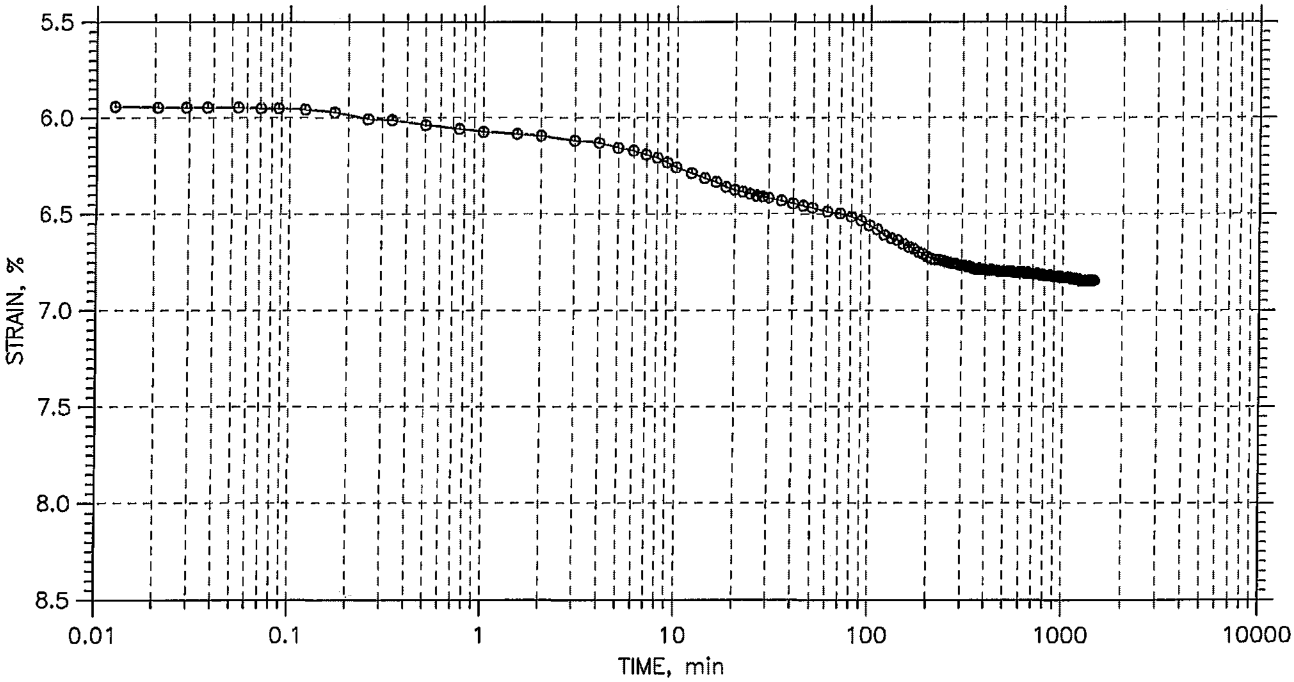
Tue, 17-JUL-2007 08:45:11

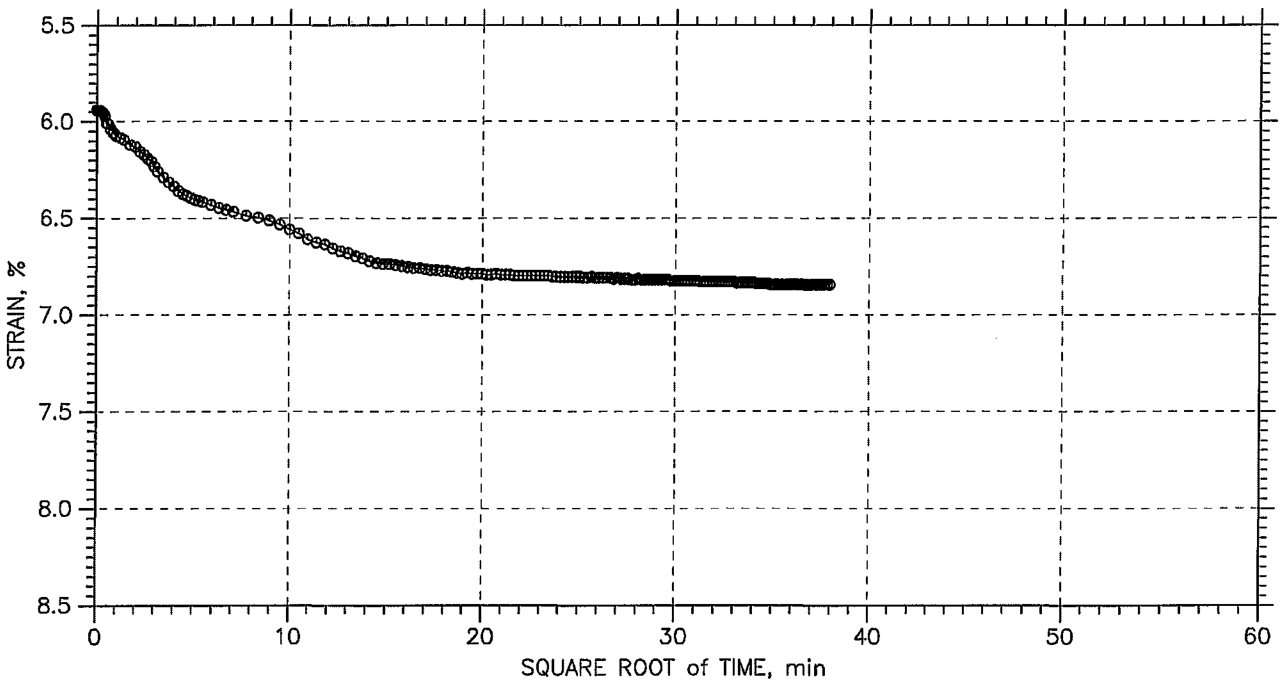
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

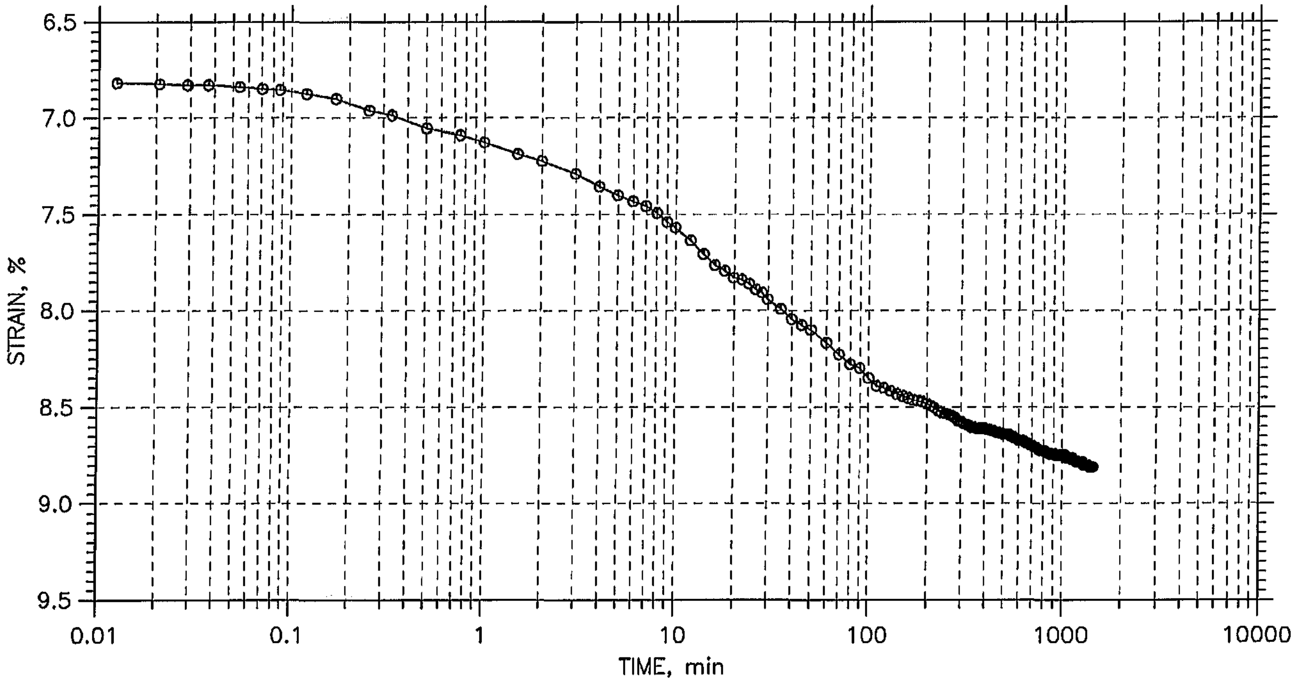
Tue, 17-JUL-2007 08:45:34

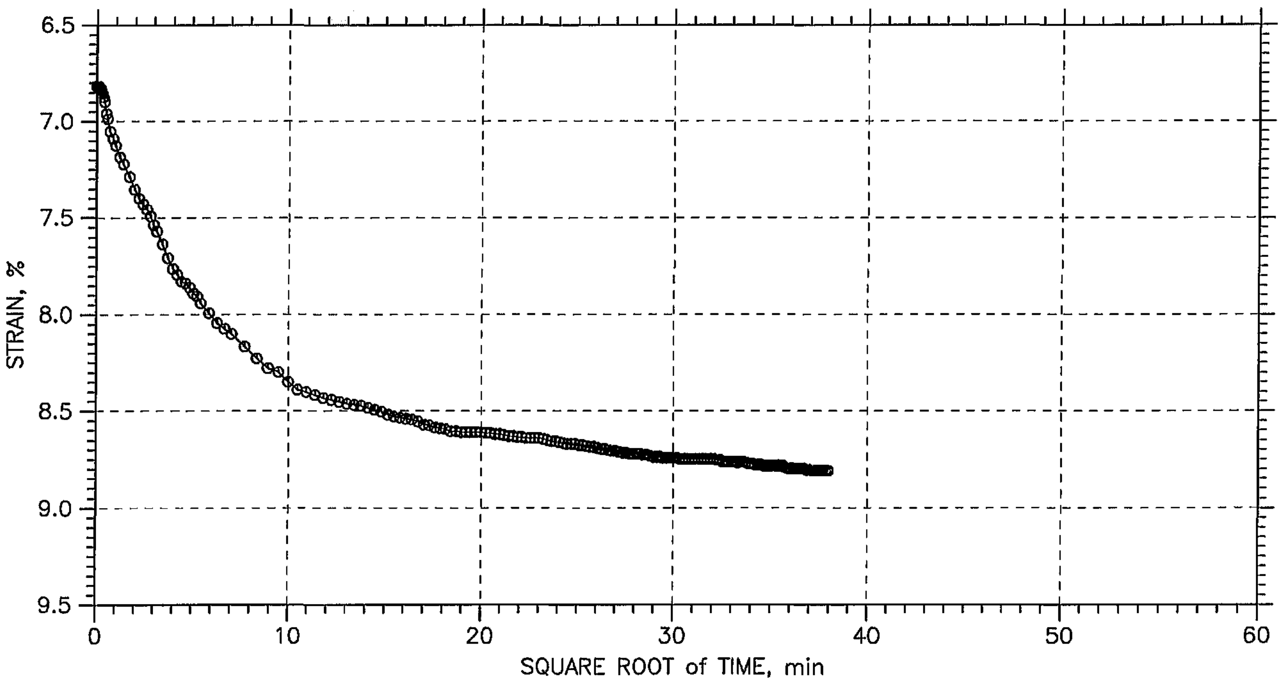
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

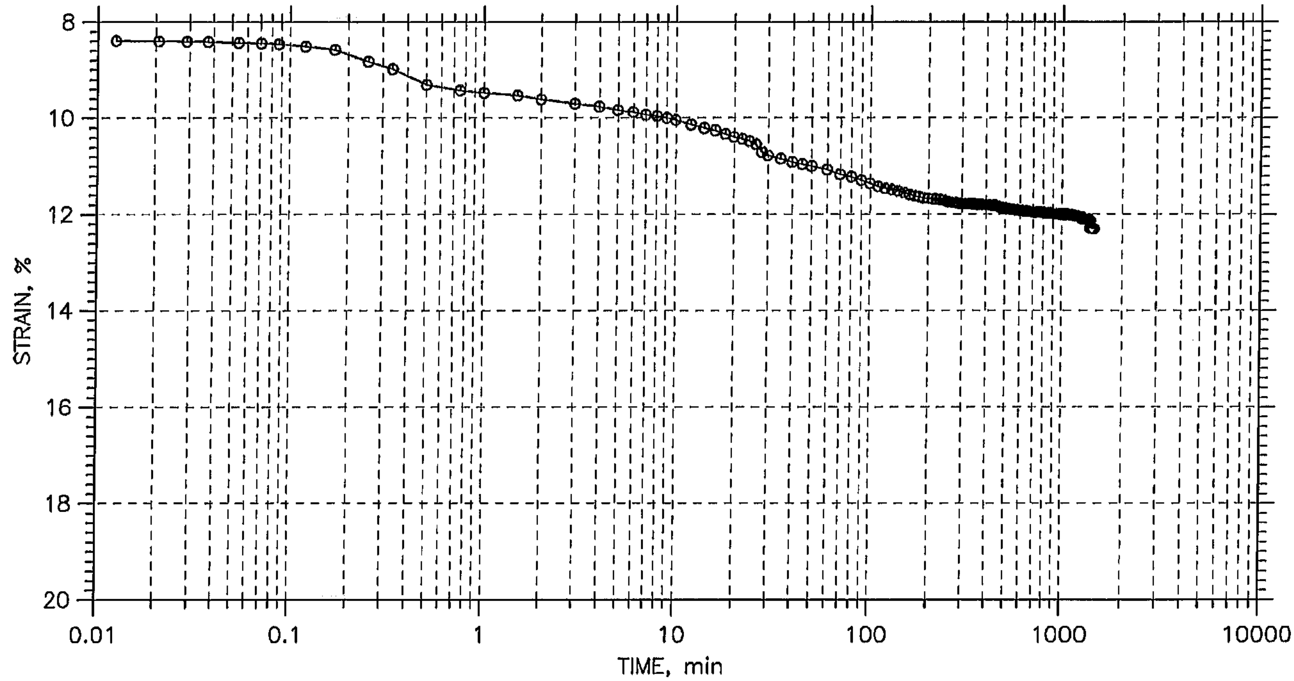
Tue, 17-JUL-2007 08:45:46

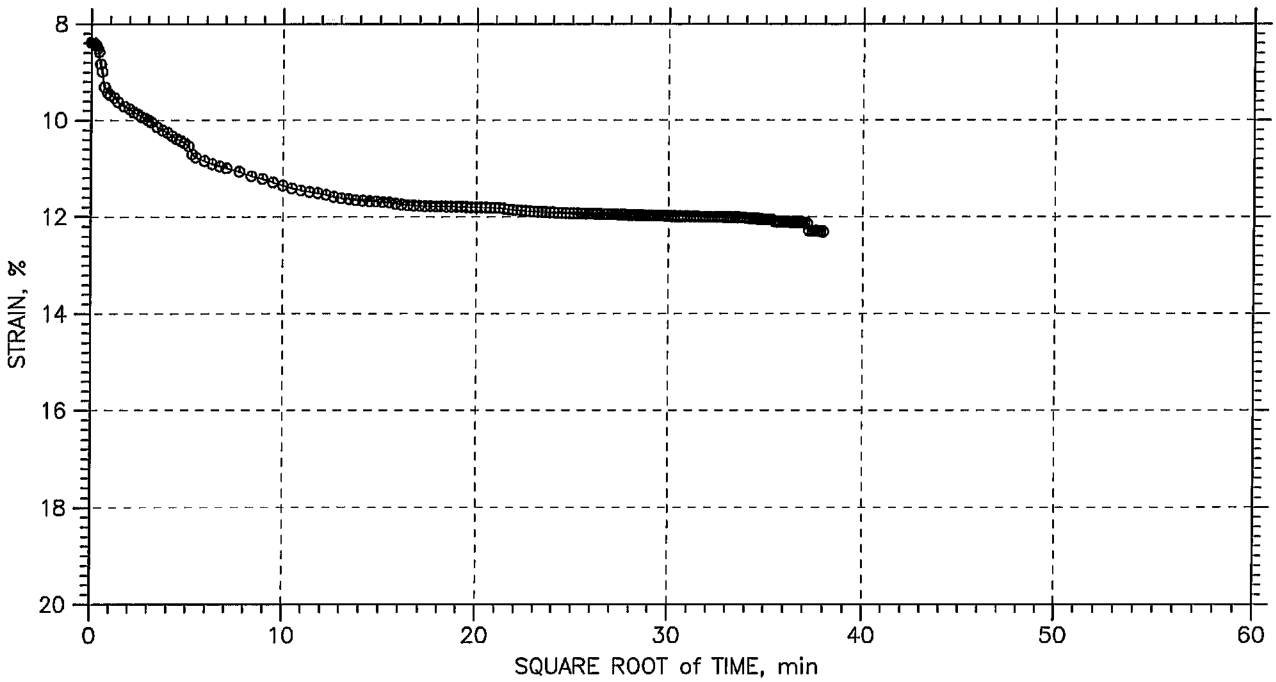
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

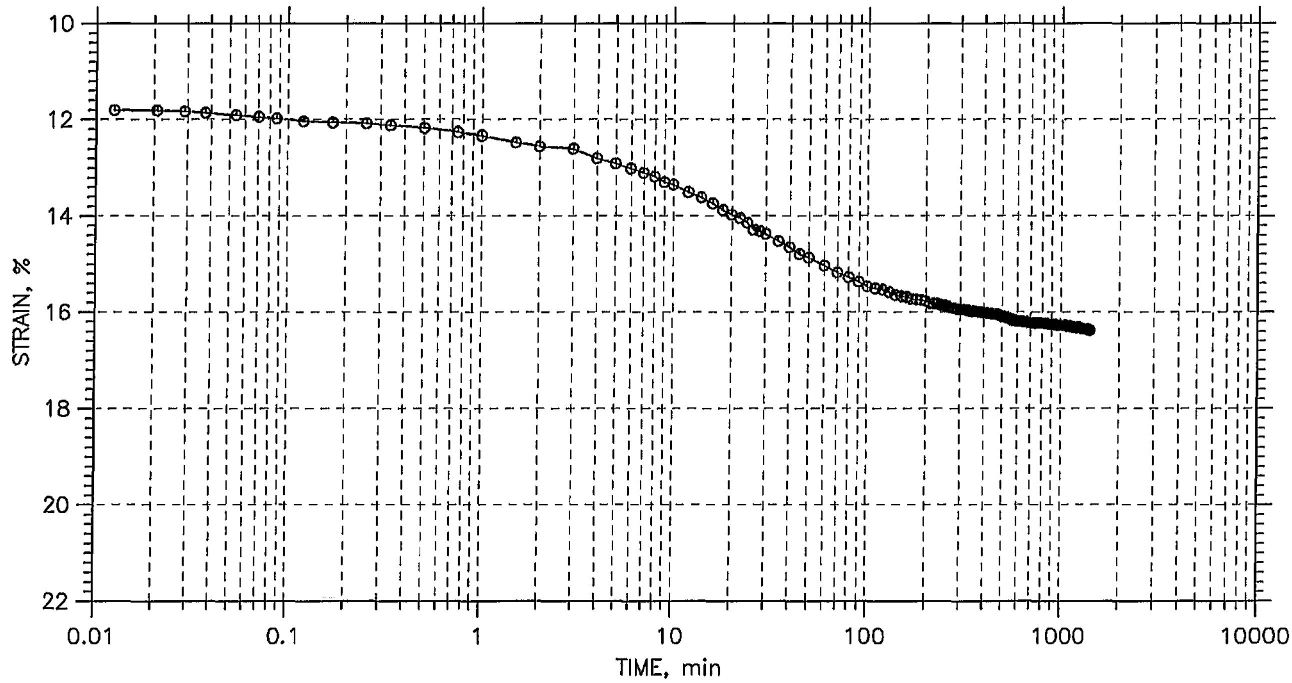
Tue, 17-JUL-2007 08:46:07

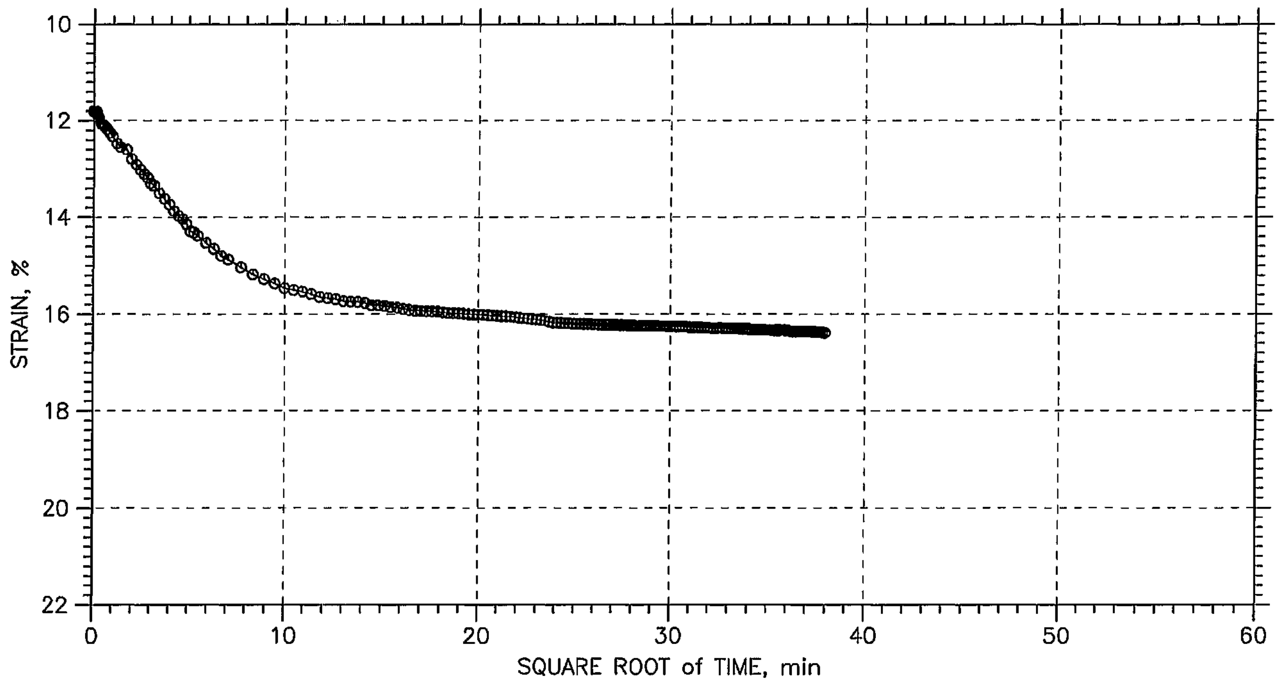
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

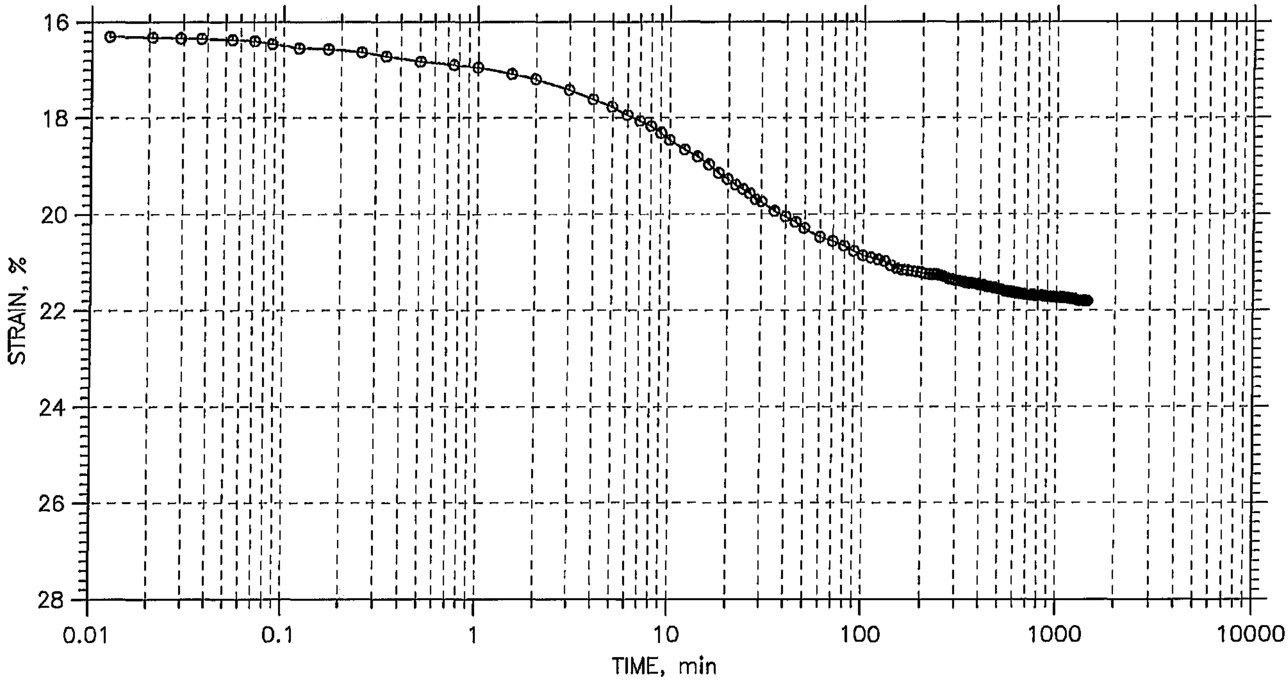
Tue, 17-JUL-2007 08:46:26

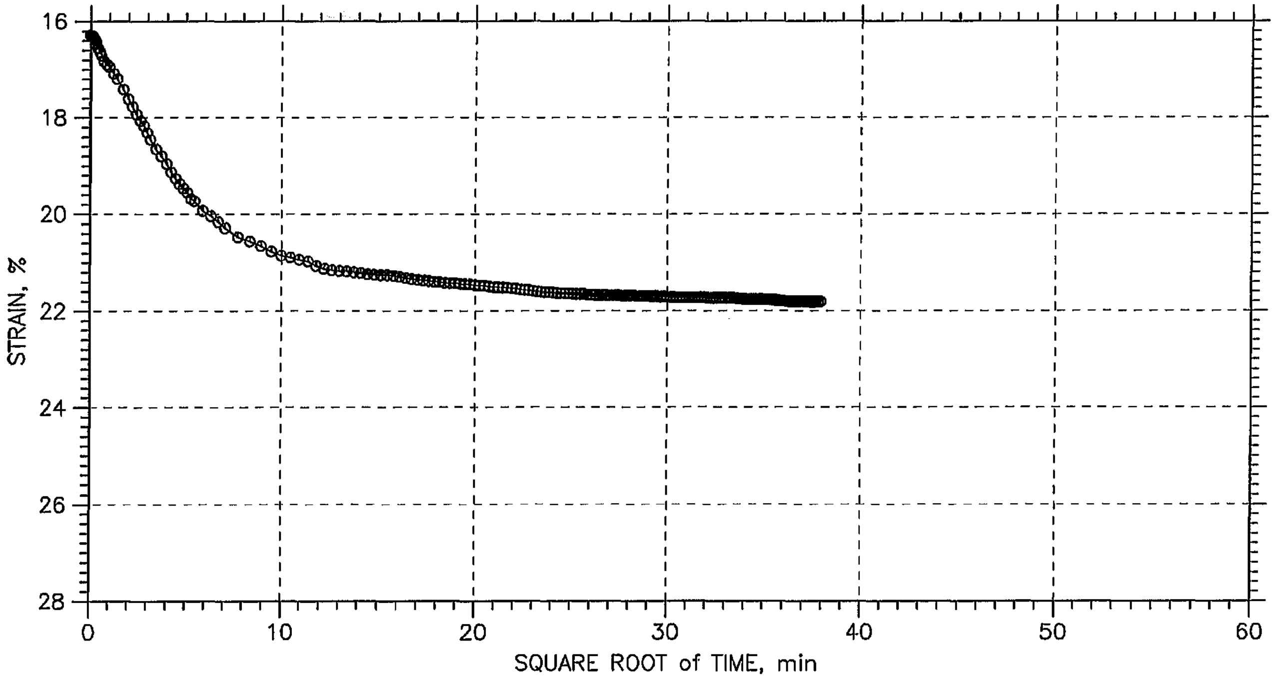
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

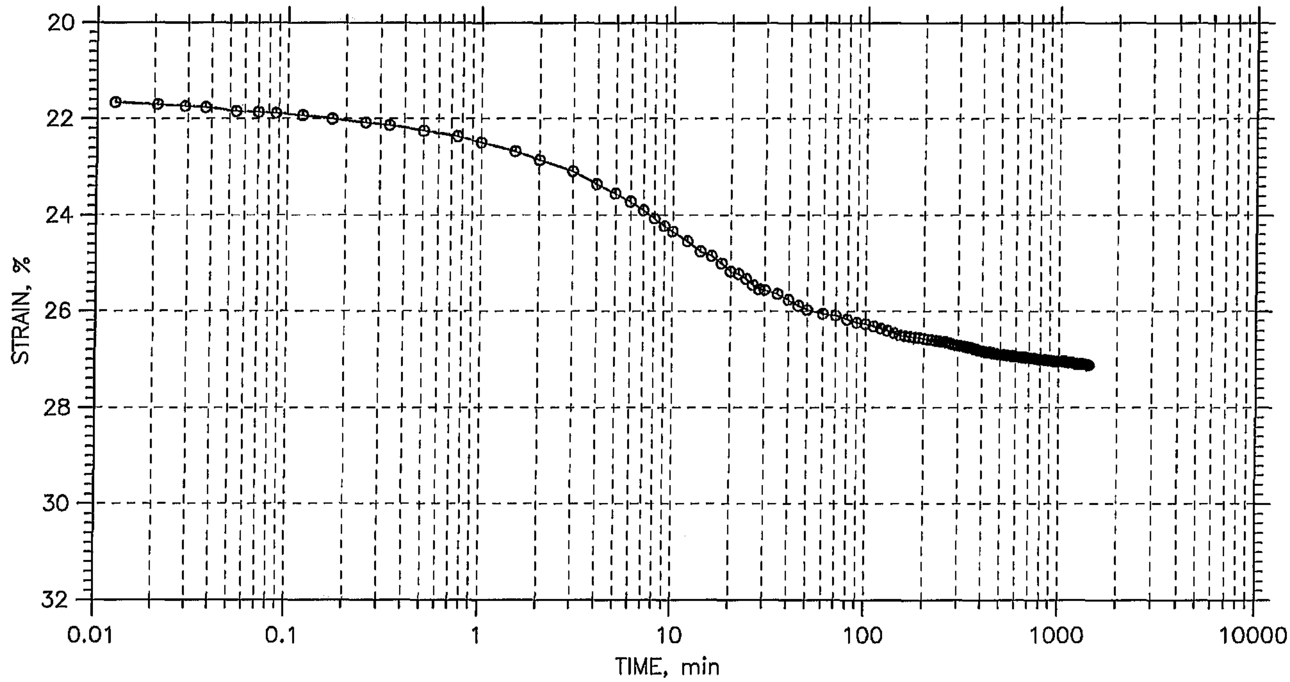
Tue, 17-JUL-2007 08:46:42

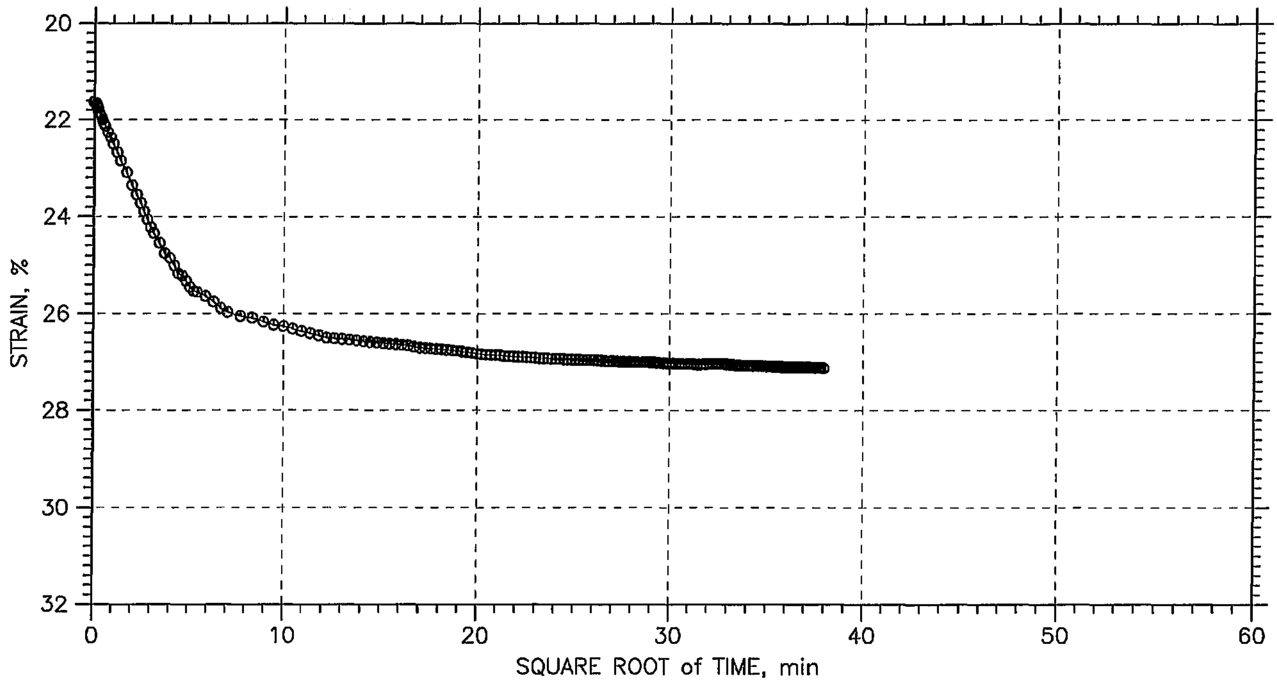
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

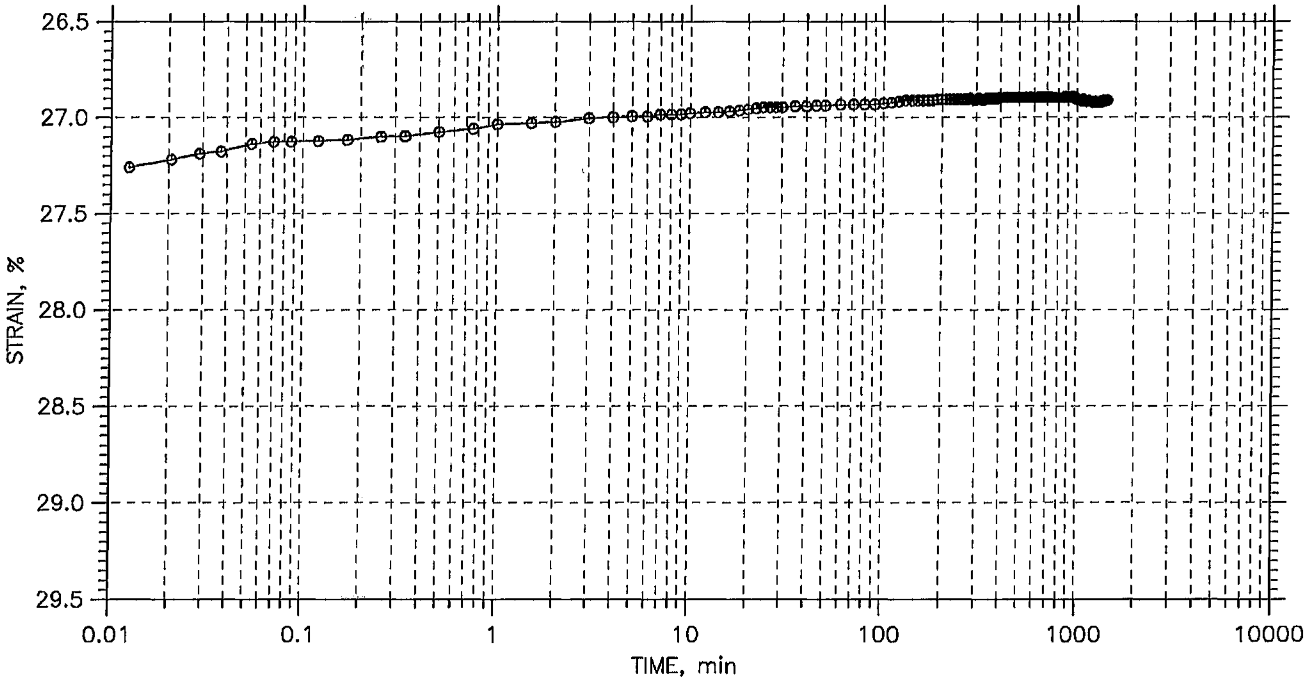
Tue, 17-JUL-2007 08:46:55

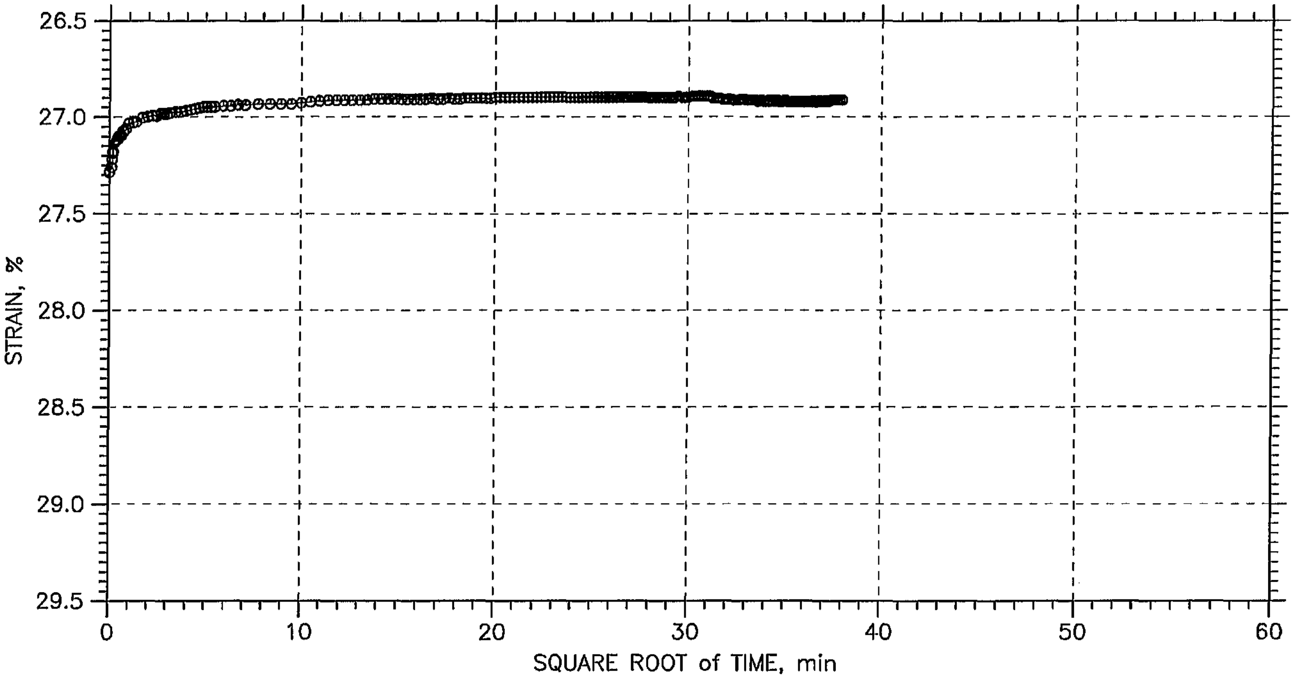
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

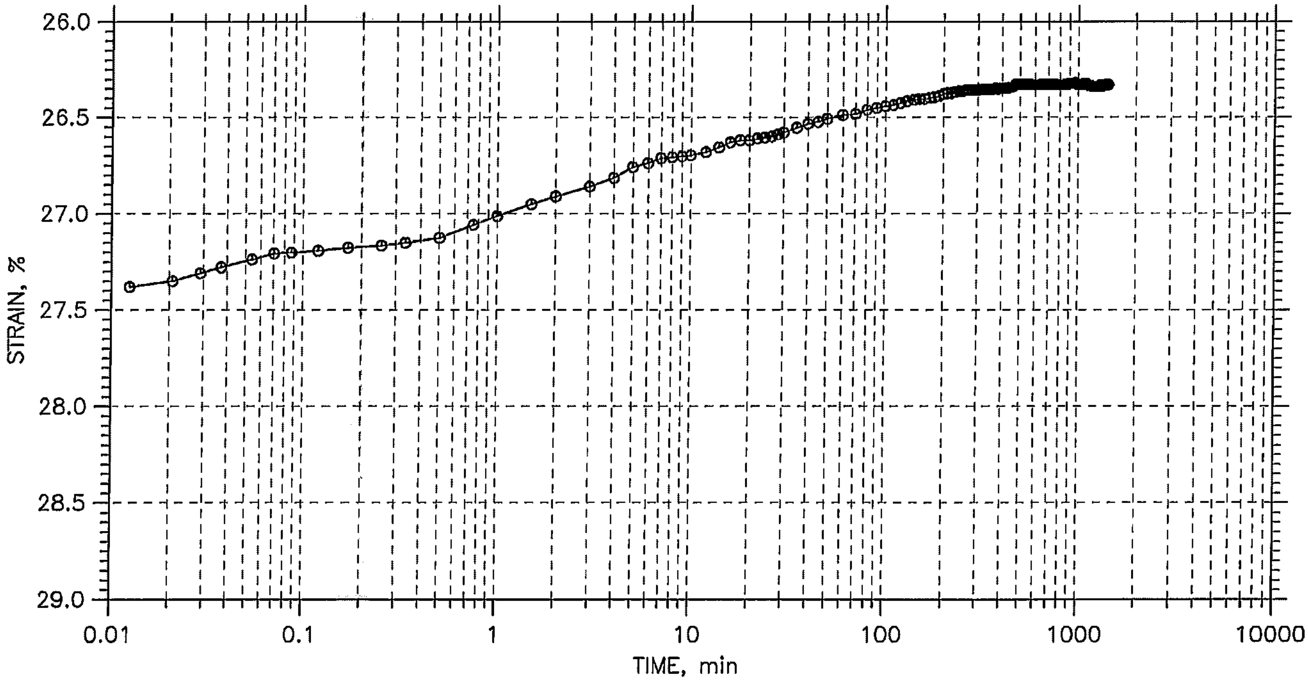
Tue, 17-JUL-2007 08:47:21

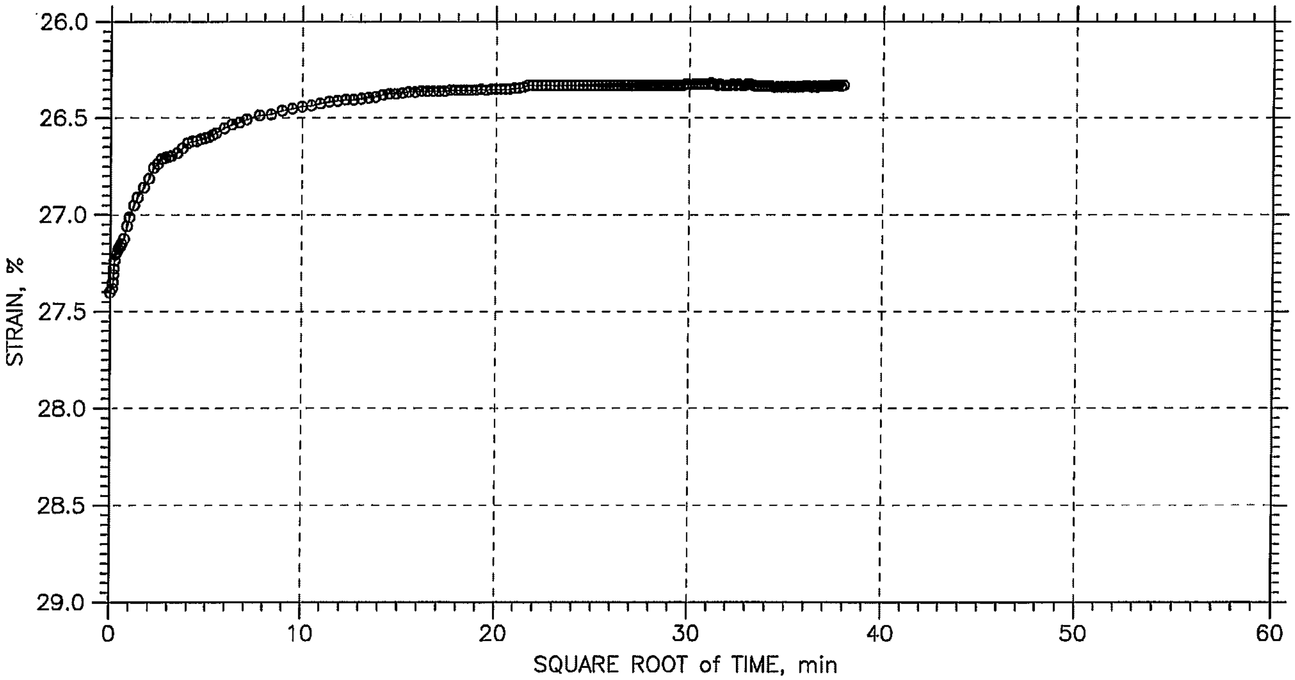
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

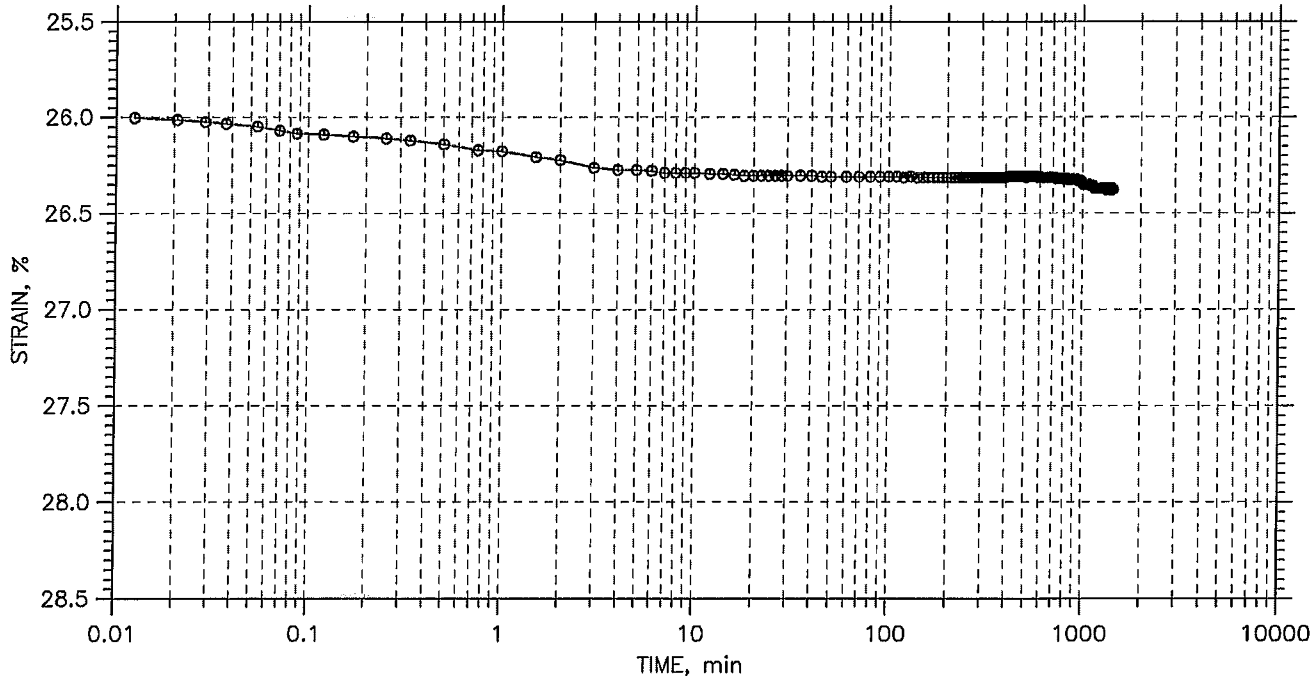
Tue, 17-JUL-2007 08:47:33

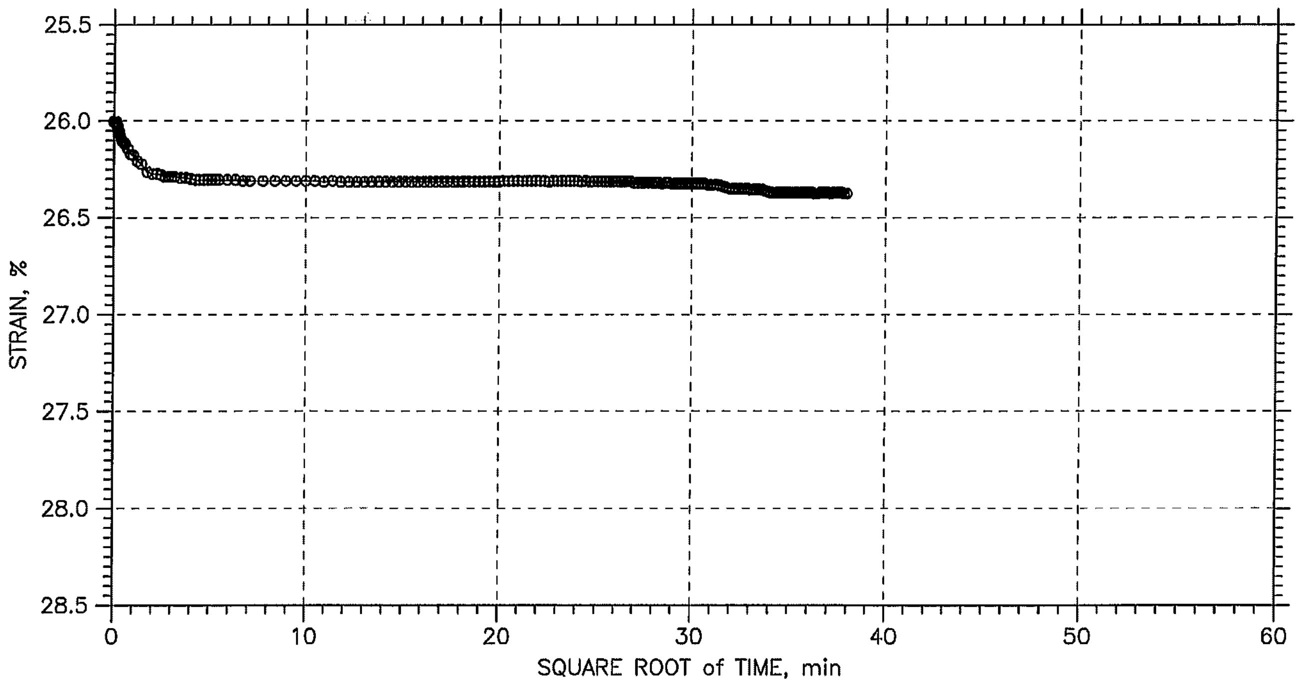
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

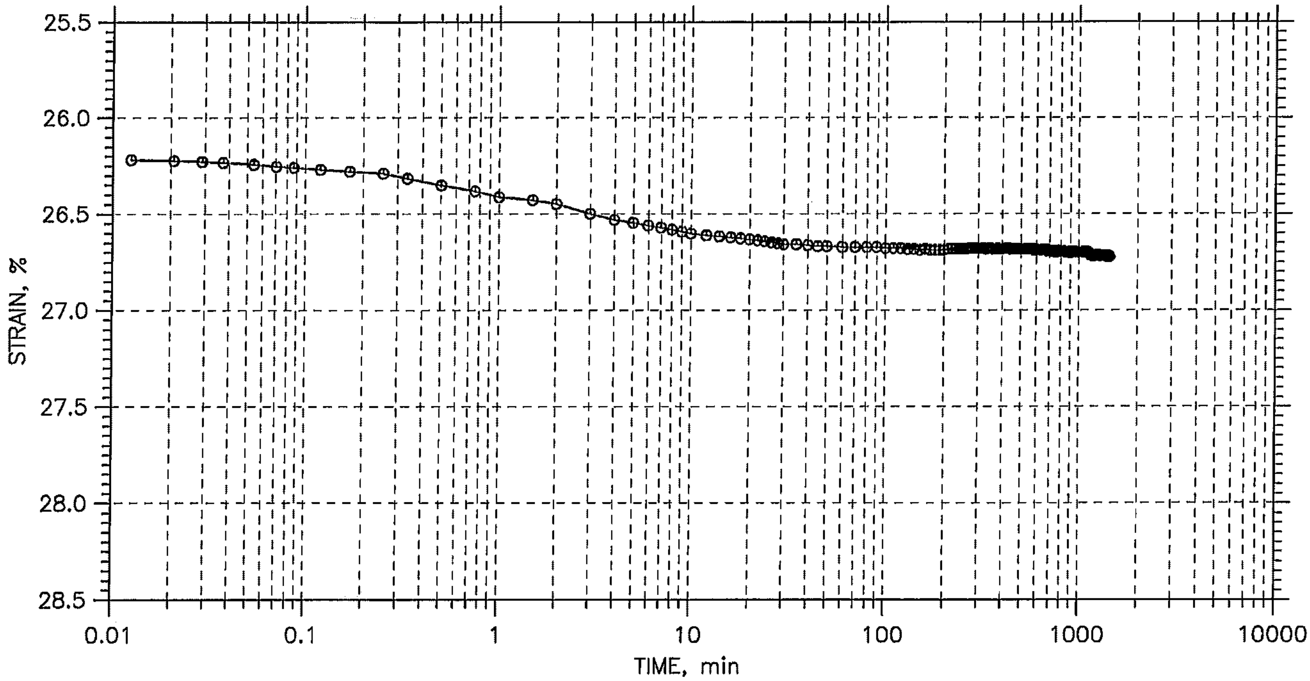
Tue, 17-JUL-2007 08:48:13

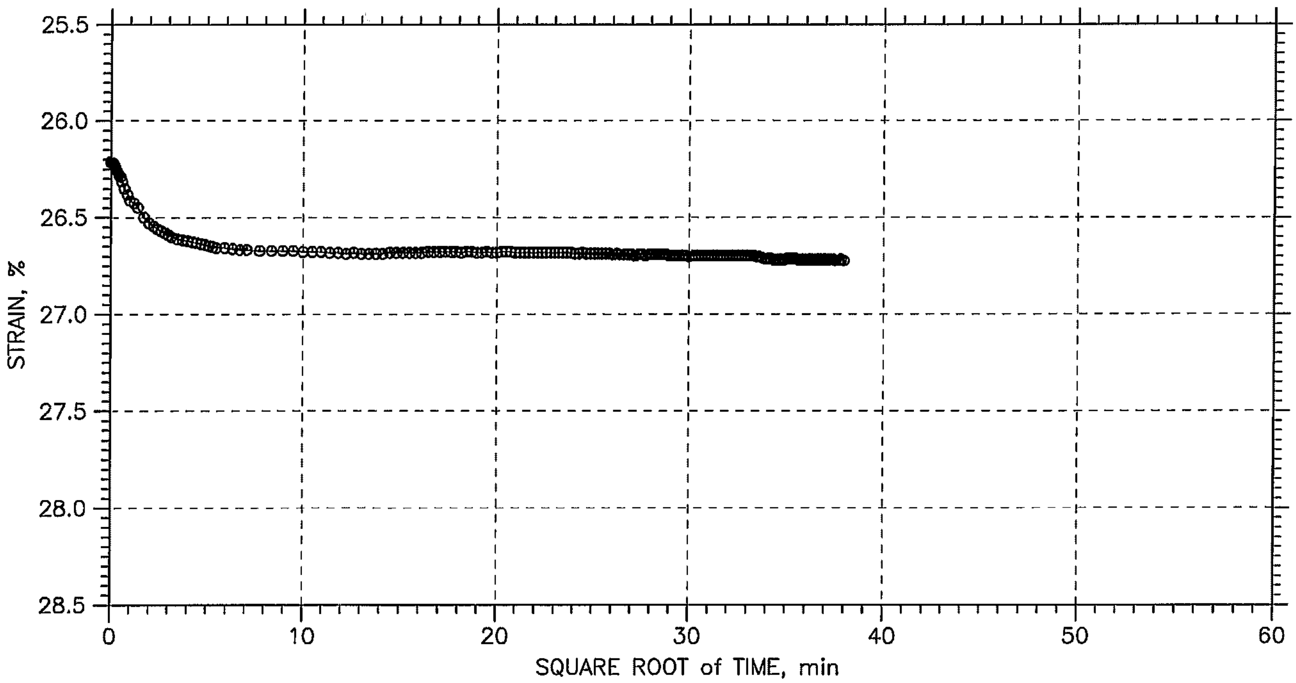
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

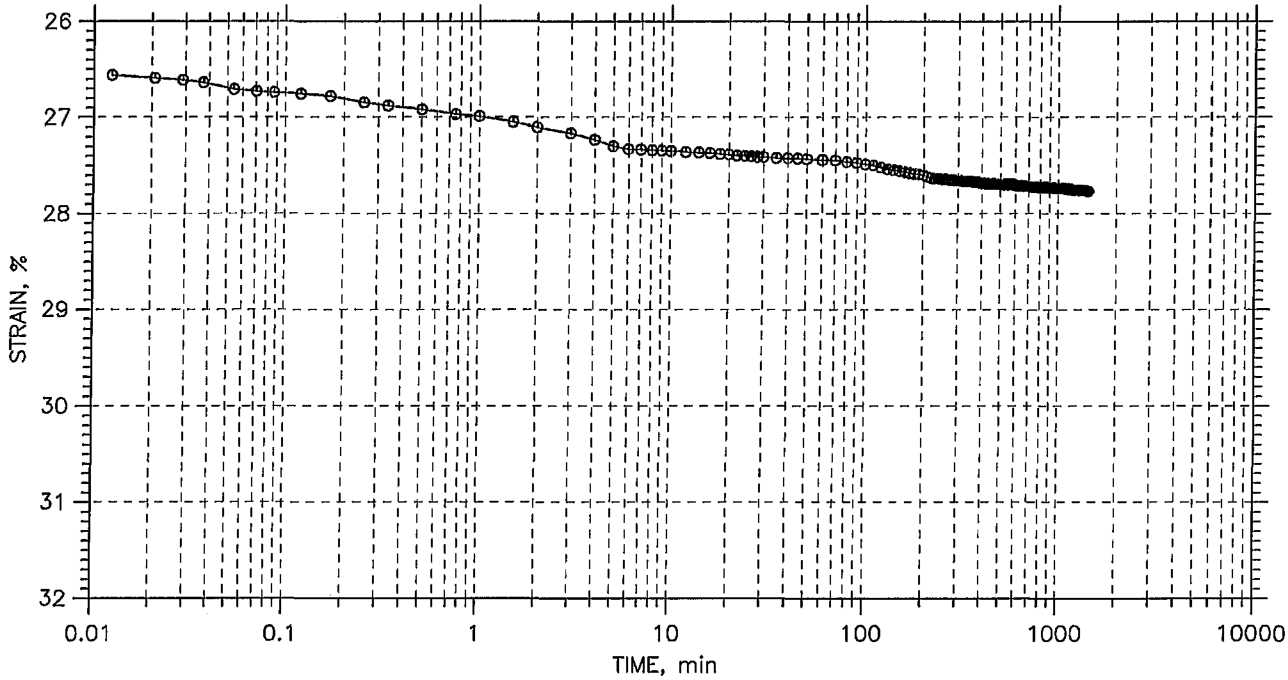
Tue, 17-JUL-2007 08:48:21

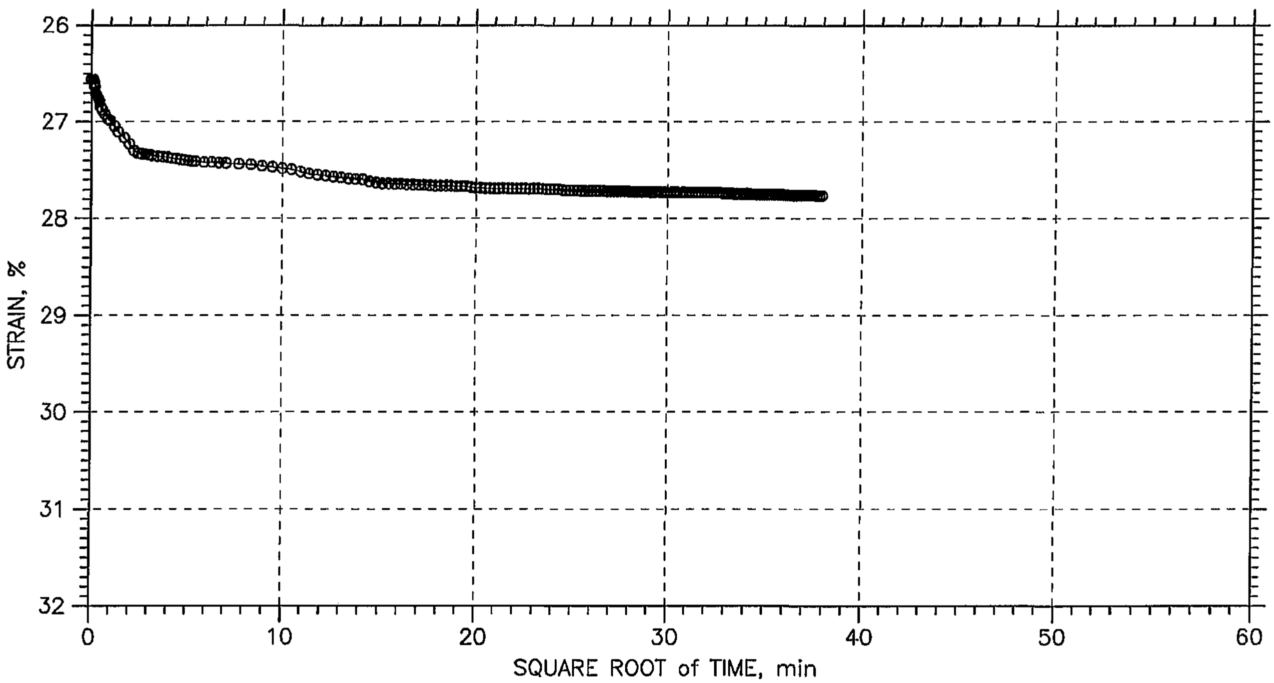
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

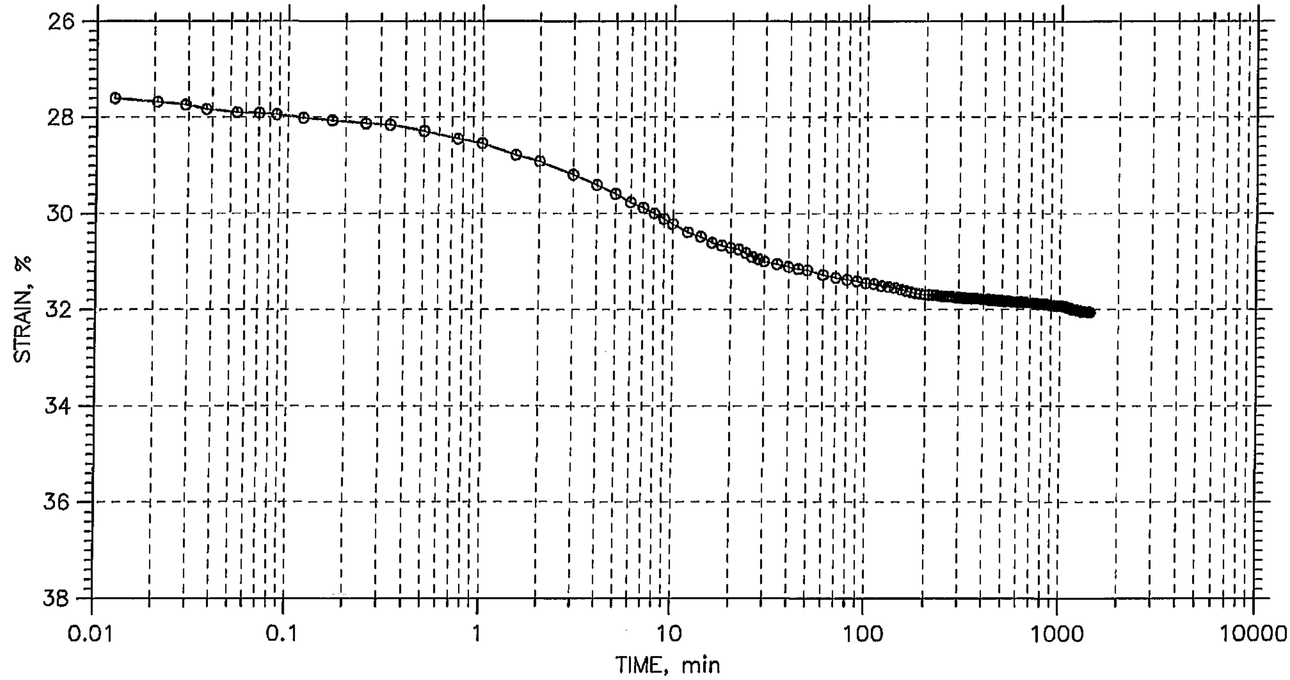
Tue, 17-JUL-2007 08:48:49

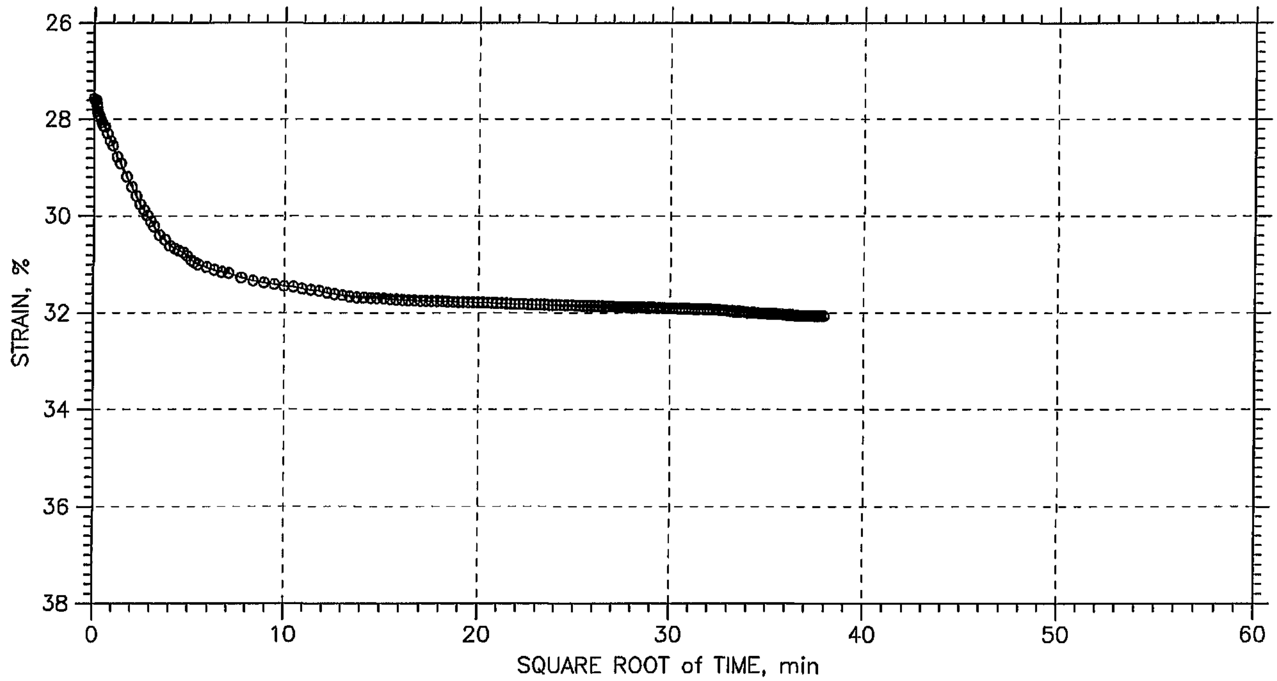
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

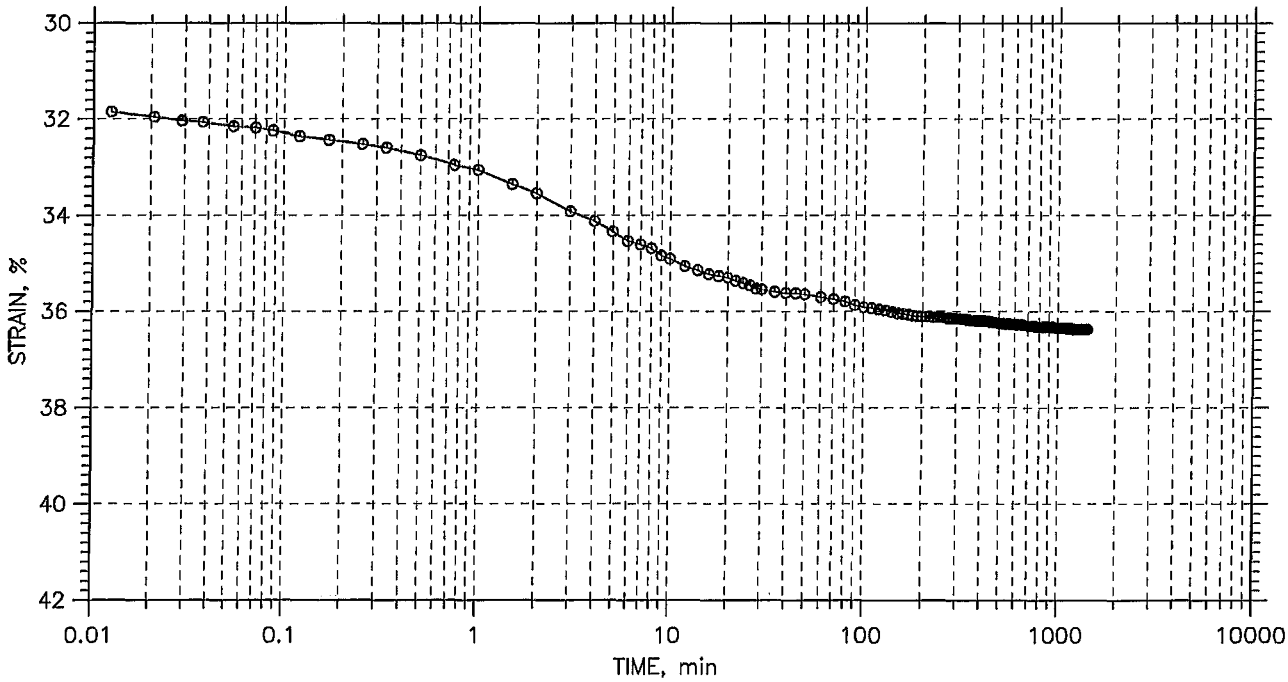
Tue, 17-JUL-2007 08:49:06

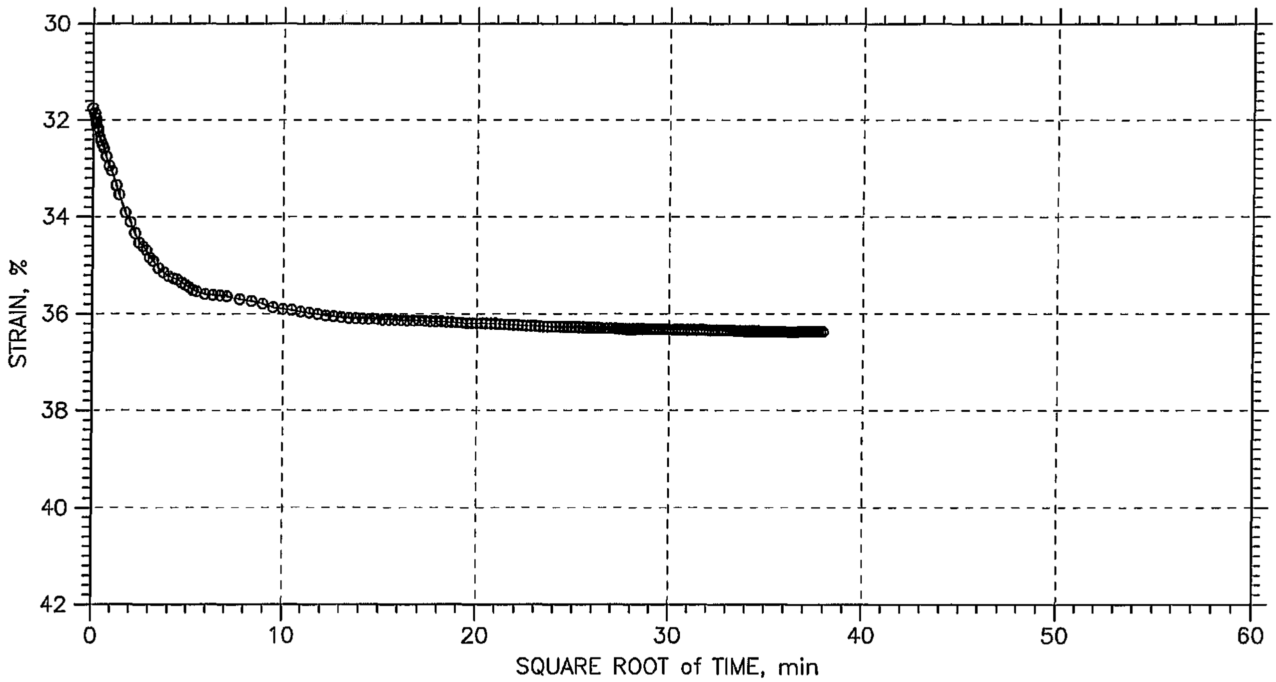
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

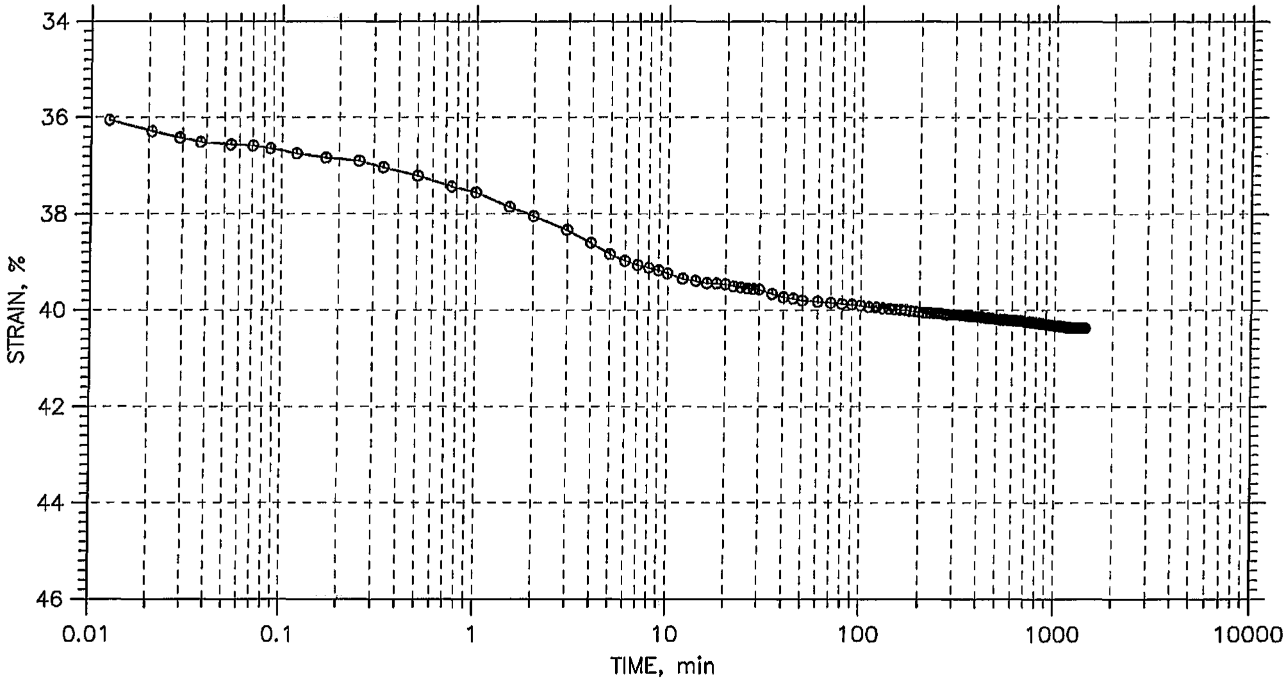
Tue, 17-JUL-2007 08:49:25

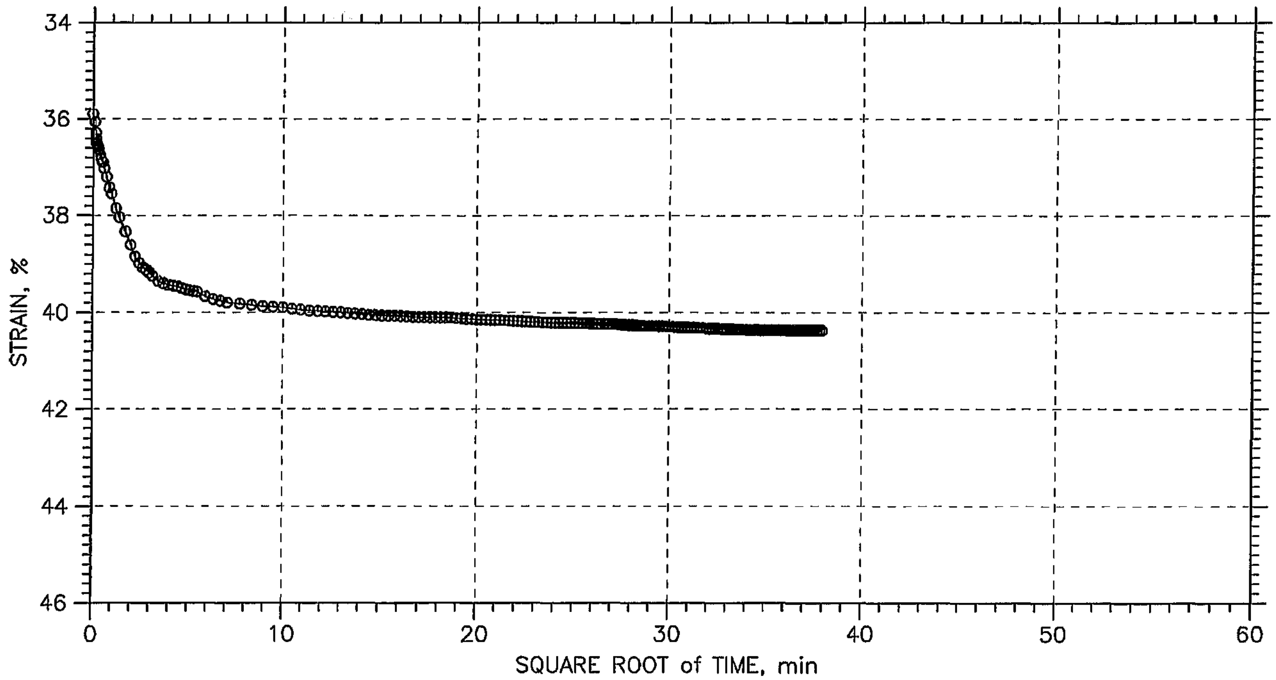
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

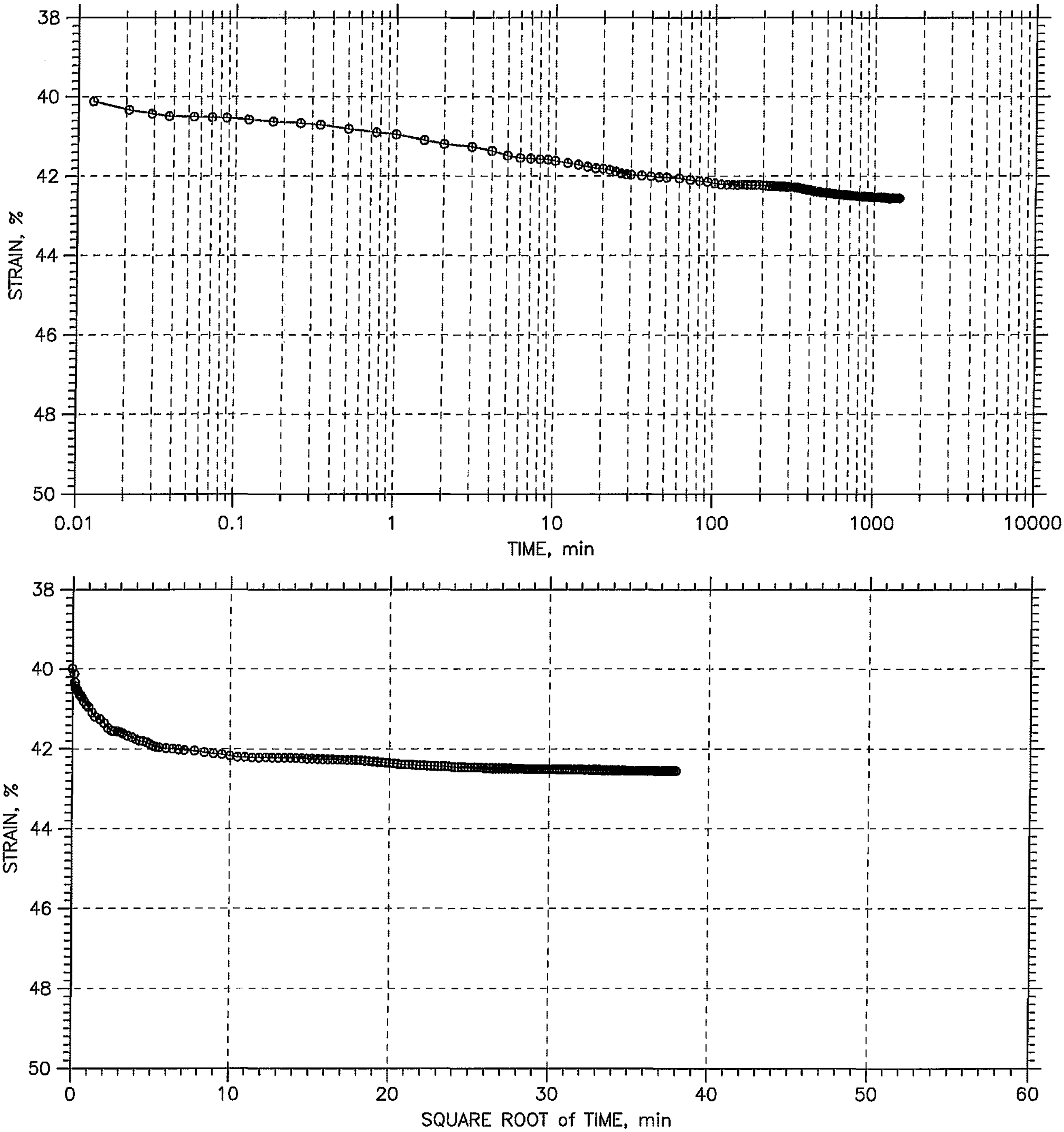
Tue, 17-JUL-2007 08:49:49

CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf



GeoTesting express, a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

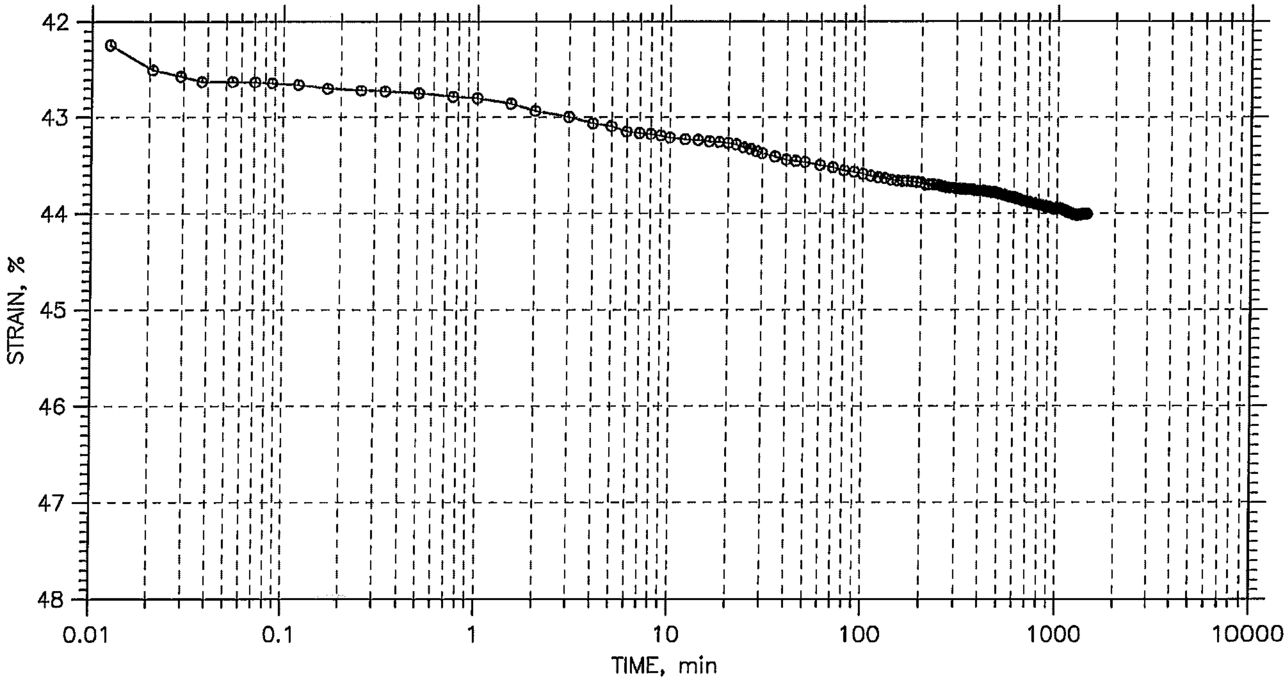
Tue, 17-JUL-2007 08:50:08

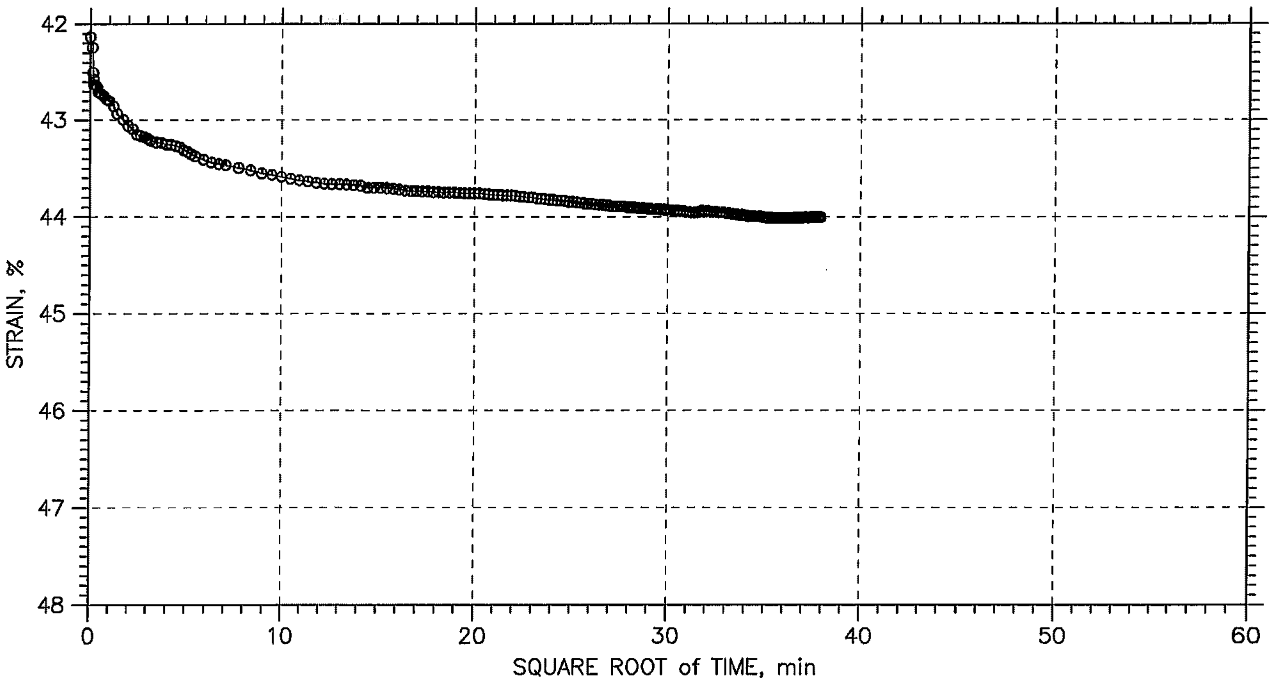
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

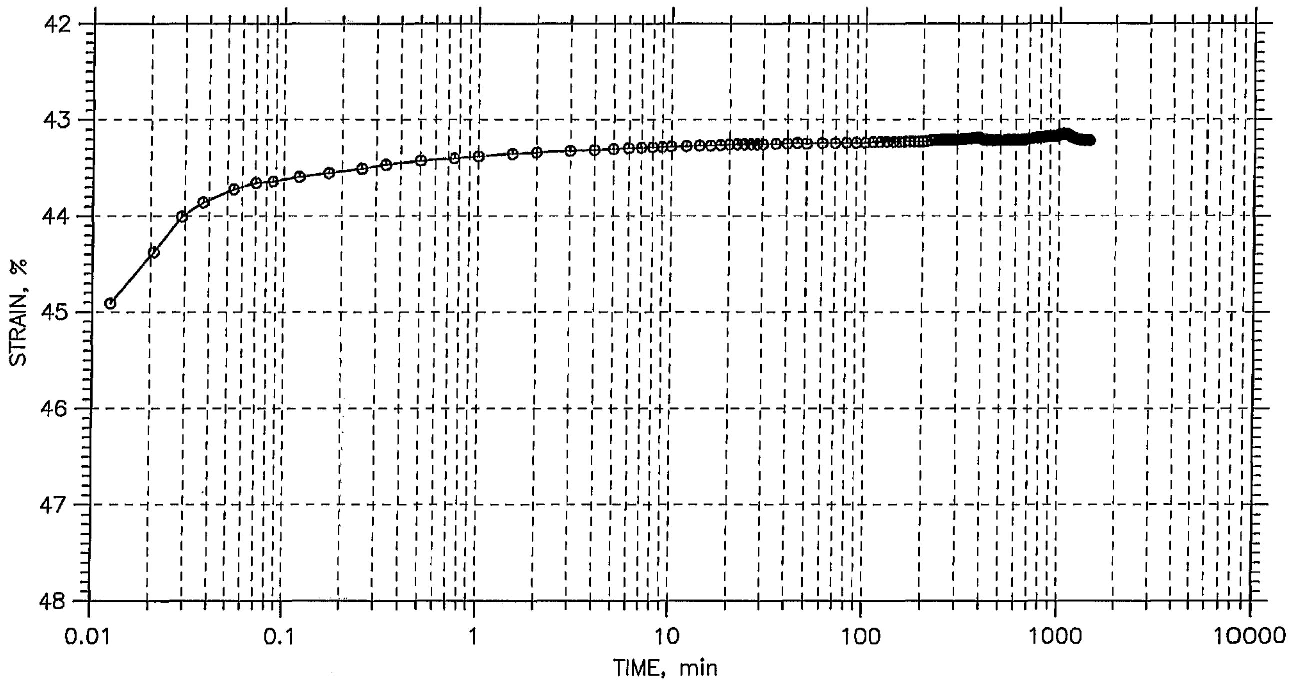
Tue, 17-JUL-2007 08:50:29

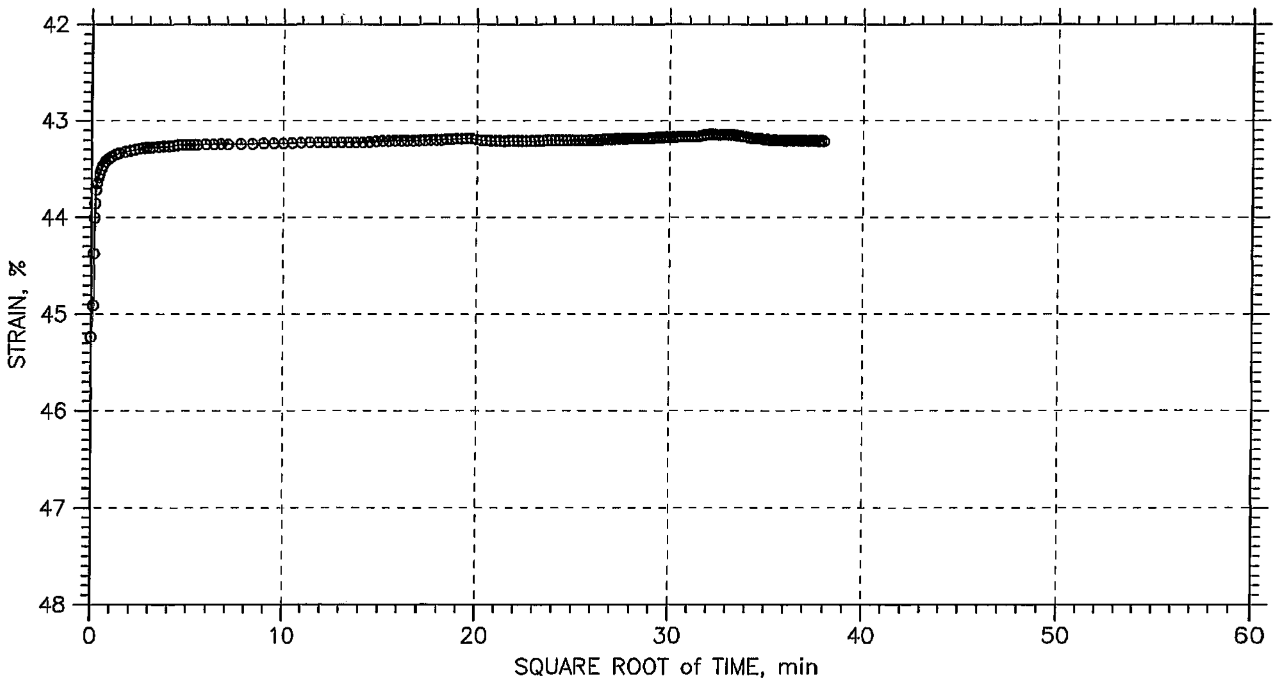
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

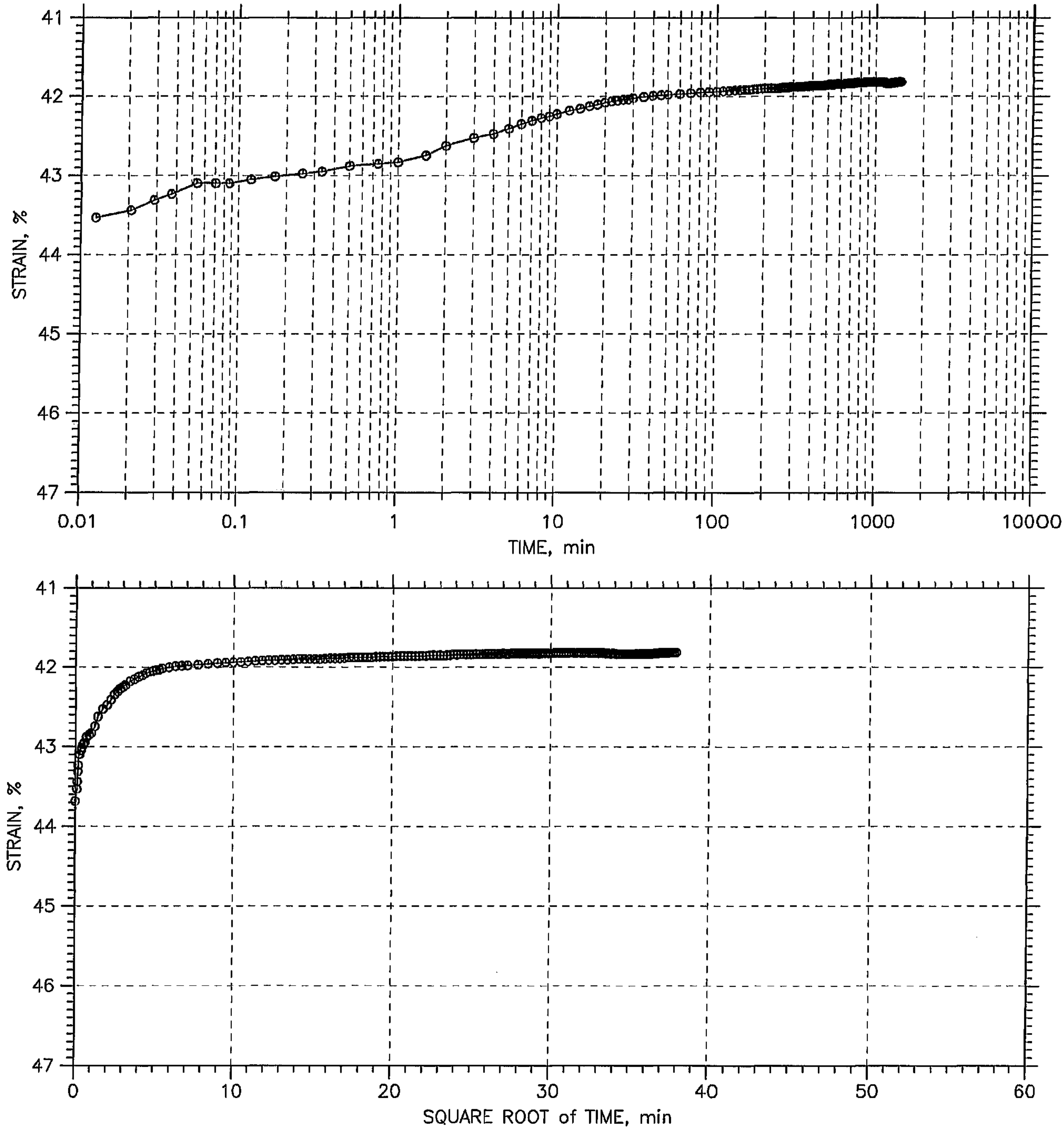
Tue, 17-JUL-2007 08:50:43

CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf



GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

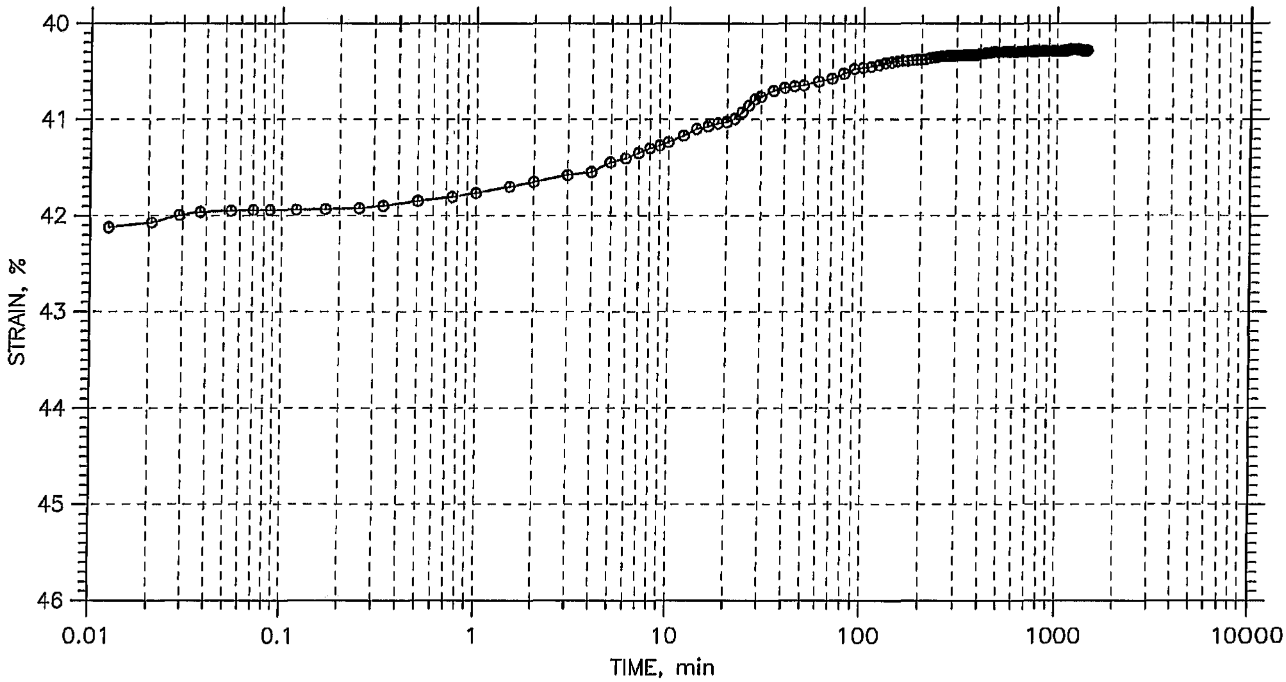
Tue, 17-JUL-2007 08:50:54

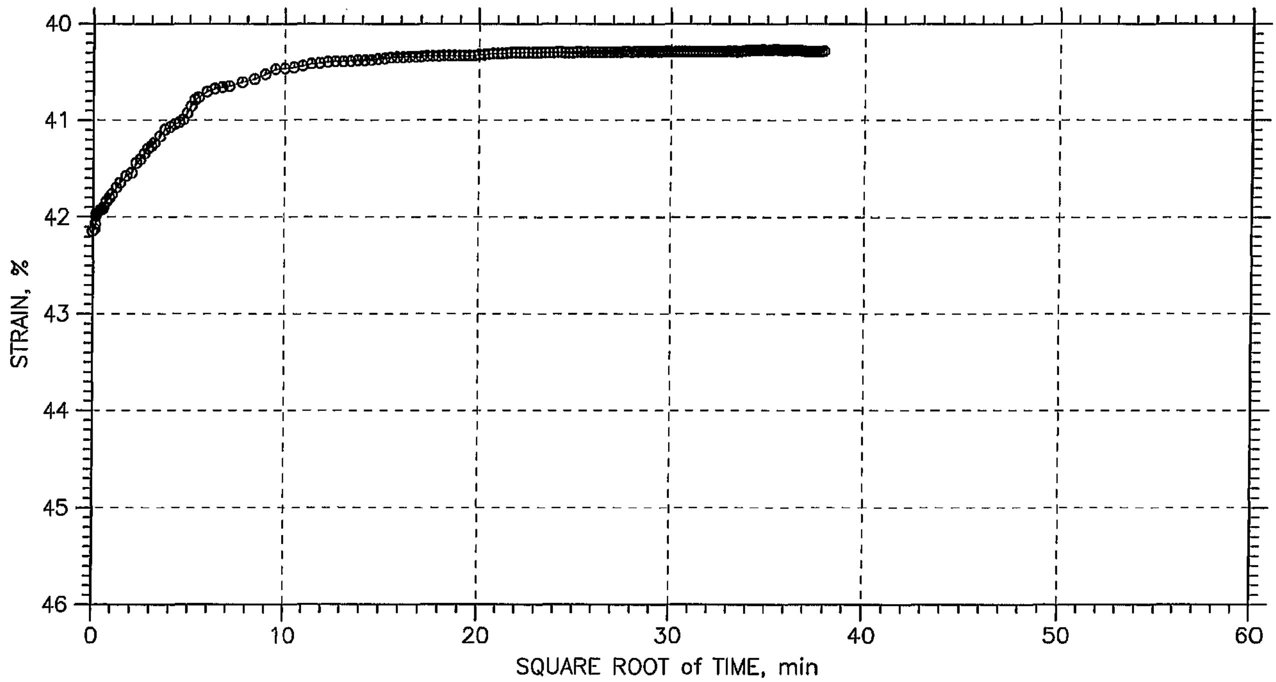
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf



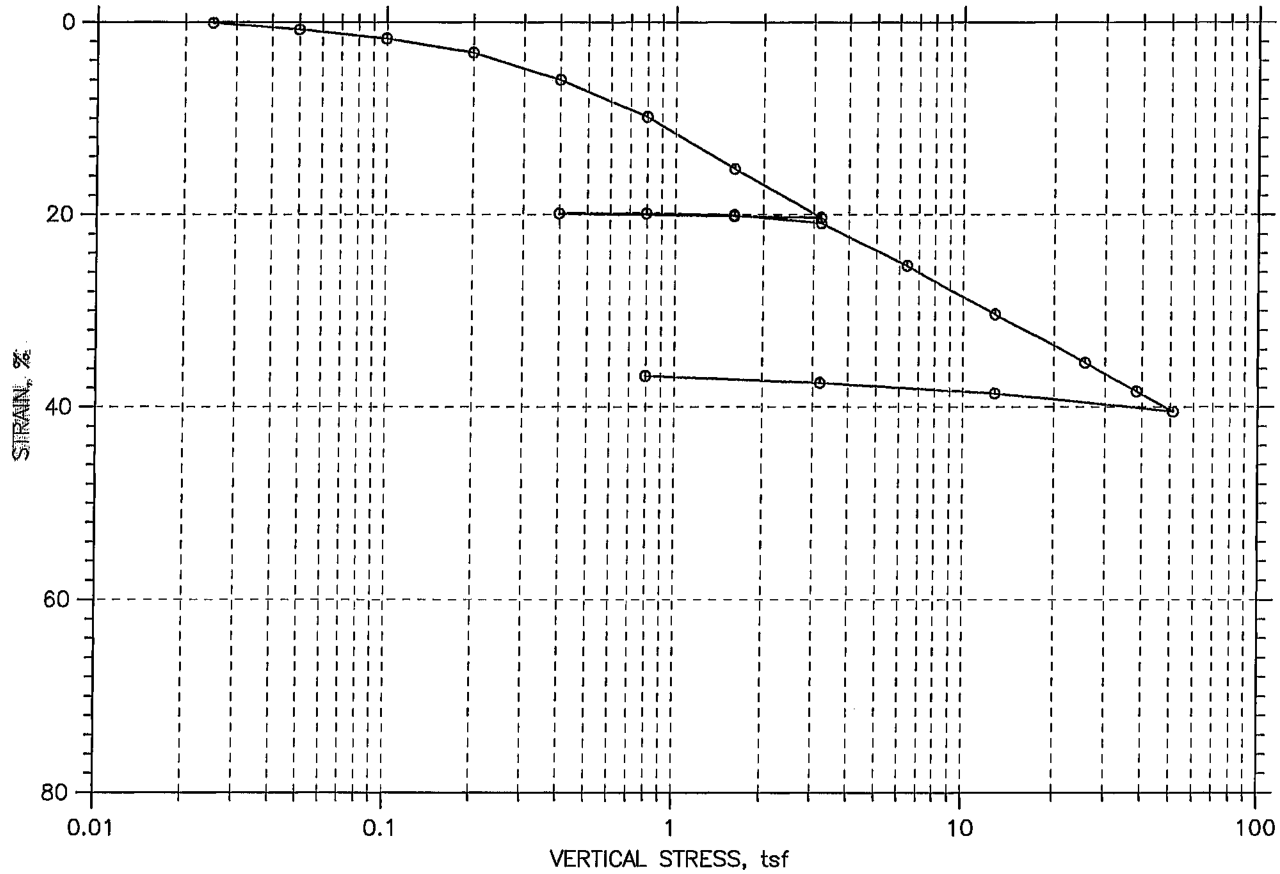


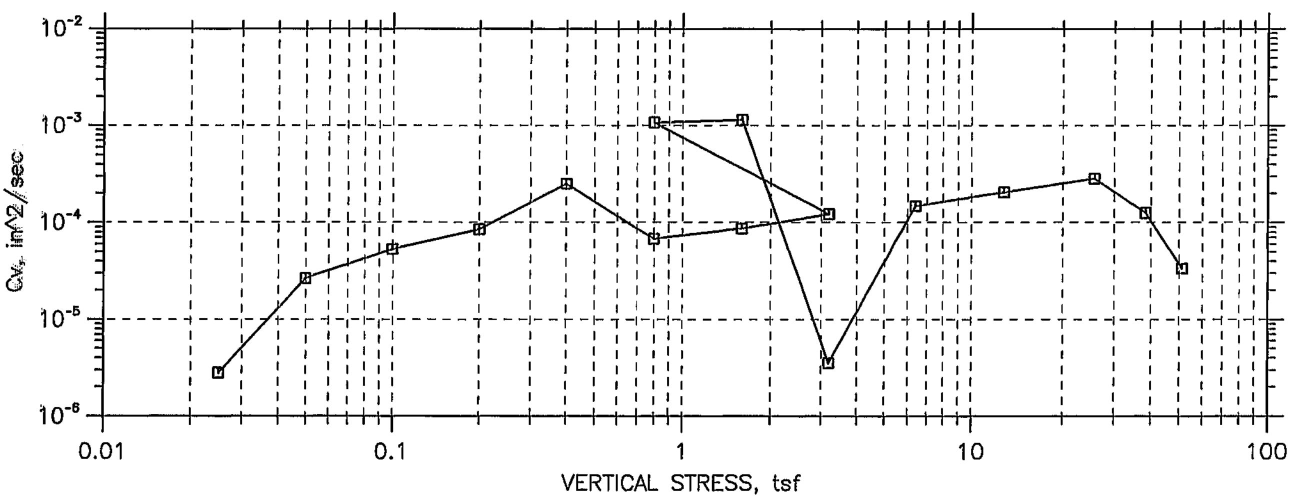
GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-15	Test Date: 06/14/2007	Depth: 42-44 ft
	Test No.: C-34	Sample Type: tube	Elevation: ---
	Description: Moist, brown silt		
	Remarks: System T		

Tue, 17-JUL-2007 08:51:03

CONSOLIDATION TEST DATA

SUMMARY REPORT



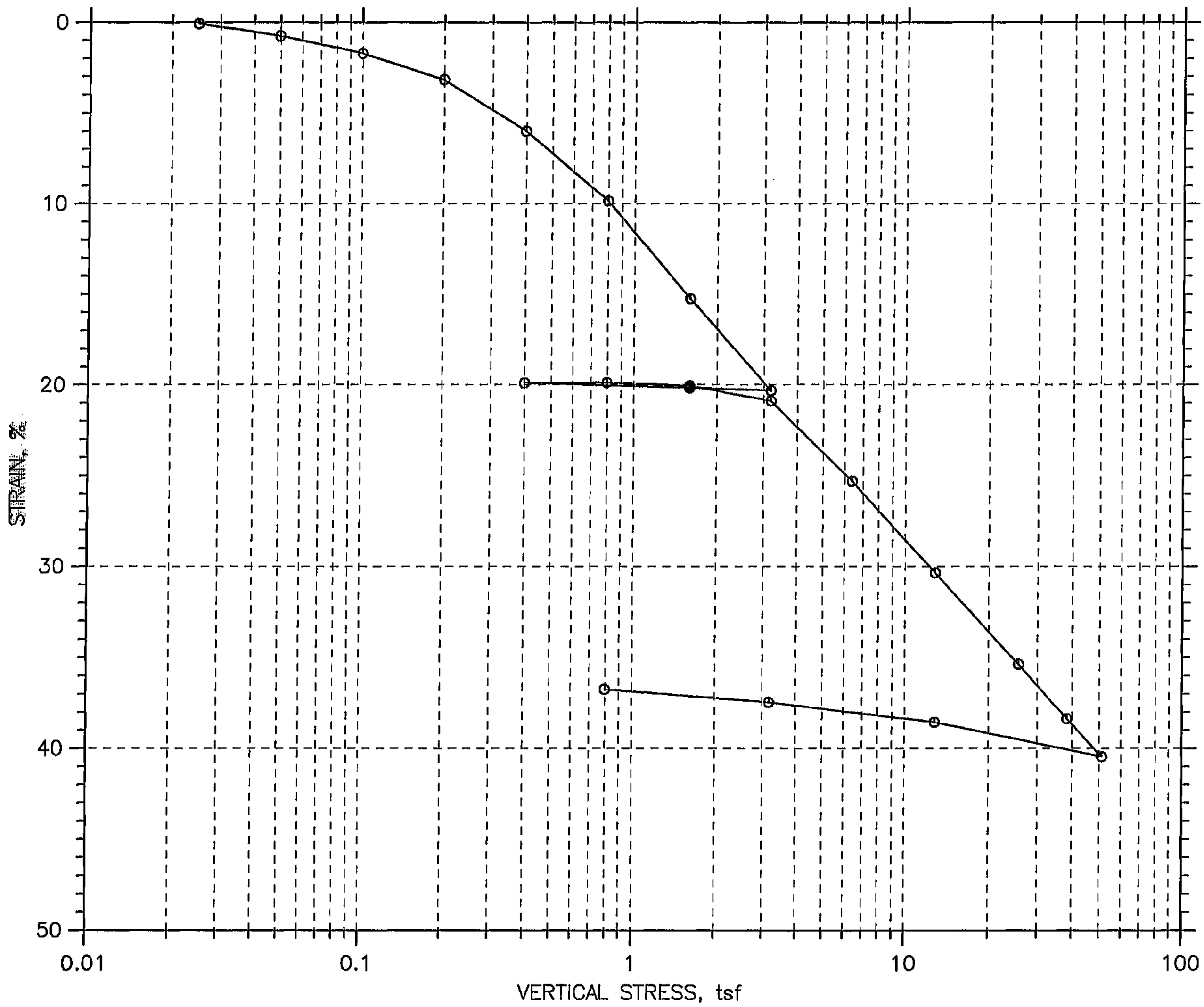


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

Tue, 04-SEP-2007 15:35:06

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	66.89	28.33
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	59.23	93.67
Compression Index: ---				Saturation, %	99.72	99.99
Diameter: 2.5 in		Height: 1 in		Void Ratio	1.75	0.74
LL: 71	PL: 39	PI: 32	GS: 2.61			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

Tue, 04-SEP-2007 15:35:08

CONSOLIDATION TEST DATA

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 20036	Tested By: md	Checked By: jdt
Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
Test No.: C-38A	Sample Type: tube	Elevation: ---

Soil Description: Moist, dark greenish gray silt with sand
Remarks: System T

Measured Specific Gravity: 2.61	Liquid Limit: 71	Initial Height: 1.00 in
Initial Void Ratio: 1.75	Plastic Limit: 39	Specimen Diameter: 2.50 in
Final Void Ratio: 0.74	Plasticity Index: 32	

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	2058	RING		bar
Wt. Container + Wet Soil, gm	230.85	342.92	313.49	102.94
Wt. Container + Dry Soil, gm	142.85	291.86	291.86	81.97
Wt. Container, gm	8.26	215.54	215.54	7.96
Wt. Dry Soil, gm	134.59	76.324	76.324	74.01
Water Content, %	65.38	66.89	28.33	28.33
Void Ratio	---	1.75	0.74	---
Degree of Saturation, %	---	99.72	99.99	---
Dry Unit Weight, pcf	---	59.234	93.665	---

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20036
Sample No.: 0317-17
Test No.: C-38A

Location: Syracuse, NY
Tested By: md
Test Date: 08/10/2007
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 19-21 ft
Elevation: ---

Soil Description: Moist, dark greenish gray silt with sand
Remarks: System T

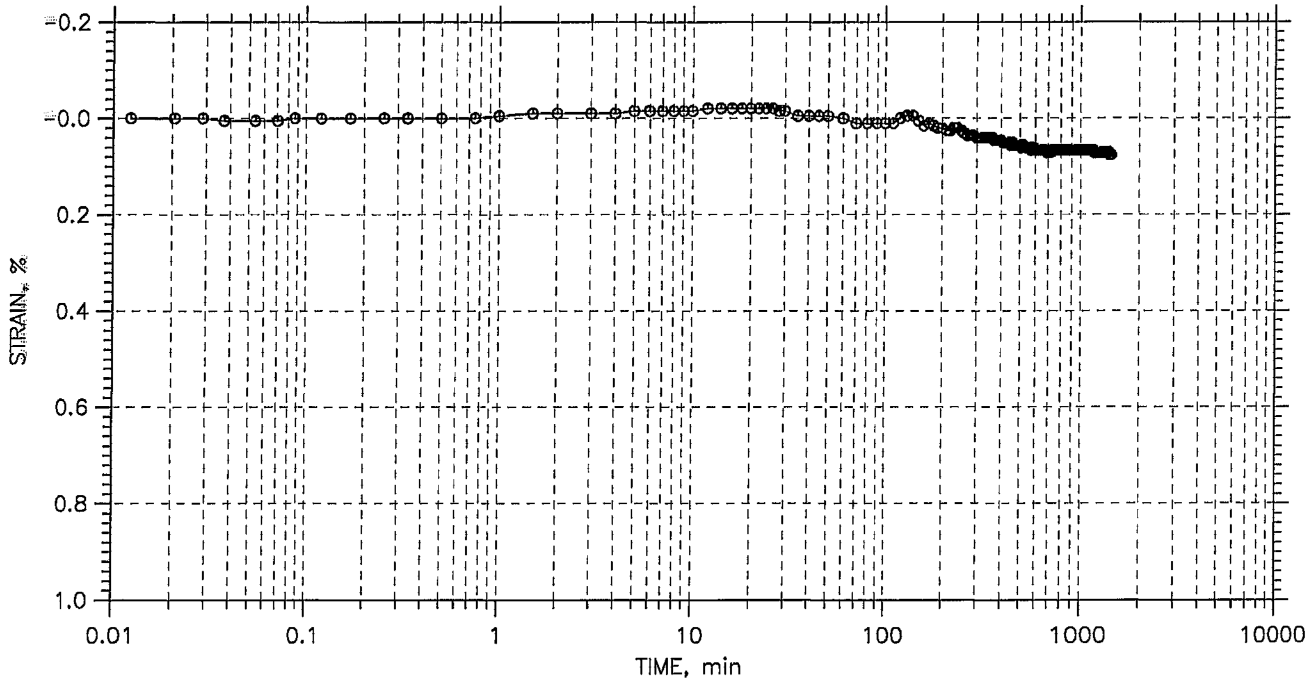
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.025	0.0007618	1.749	0.08	294.3	0.0	2.79e-006	0.00e+000	2.79e-006
2	0.05	0.0075	1.730	0.75	30.6	0.0	2.66e-005	0.00e+000	2.66e-005
3	0.1	0.01714	1.704	1.71	15.1	0.0	5.31e-005	0.00e+000	5.31e-005
4	0.2	0.03168	1.664	3.17	9.2	0.0	8.51e-005	0.00e+000	8.51e-005
5	0.4	0.05994	1.586	5.99	3.0	0.0	2.50e-004	0.00e+000	2.50e-004
6	0.8	0.09847	1.480	9.85	11.6	8.8	5.99e-005	7.92e-005	6.82e-005
7	1.6	0.1524	1.332	15.24	8.0	6.5	7.85e-005	9.69e-005	8.67e-005
8	3.2	0.2031	1.192	20.31	3.8	5.3	1.48e-004	1.04e-004	1.22e-004
9	1.6	0.2017	1.196	20.17	0.1	0.0	3.82e-003	0.00e+000	3.82e-003
10	0.4	0.1988	1.204	19.88	0.5	0.0	1.11e-003	0.00e+000	1.11e-003
11	0.8	0.1988	1.204	19.88	0.5	0.0	1.08e-003	0.00e+000	1.08e-003
12	1.6	0.2005	1.199	20.05	0.5	0.0	1.15e-003	0.00e+000	1.15e-003
13	3.2	0.2088	1.176	20.88	147.2	0.0	3.53e-006	0.00e+000	3.53e-006
14	6.4	0.2529	1.055	25.29	2.8	3.8	1.74e-004	1.29e-004	1.48e-004
15	12.8	0.3034	0.916	30.34	2.0	2.2	2.14e-004	1.98e-004	2.06e-004
16	25.6	0.3538	0.777	35.38	1.6	1.0	2.29e-004	3.71e-004	2.83e-004
17	38.4	0.3837	0.695	38.37	2.6	0.0	1.26e-004	0.00e+000	1.26e-004
18	51.2	0.4045	0.638	40.45	9.0	0.0	3.36e-005	0.00e+000	3.36e-005
19	12.8	0.3856	0.690	38.56	0.1	0.0	4.37e-003	0.00e+000	4.37e-003
20	3.2	0.3747	0.720	37.47	0.1	0.0	2.18e-003	0.00e+000	2.18e-003
21	0.8	0.3676	0.740	36.76	13.0	0.0	2.50e-005	0.00e+000	2.50e-005

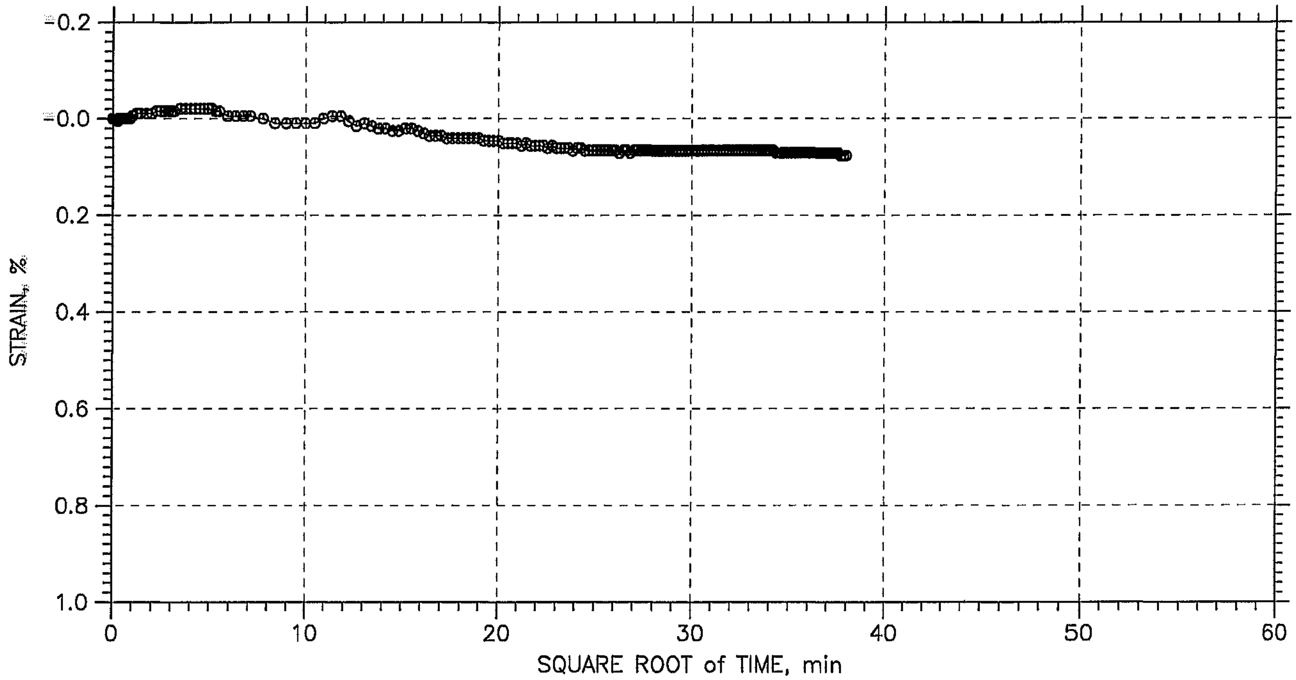
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

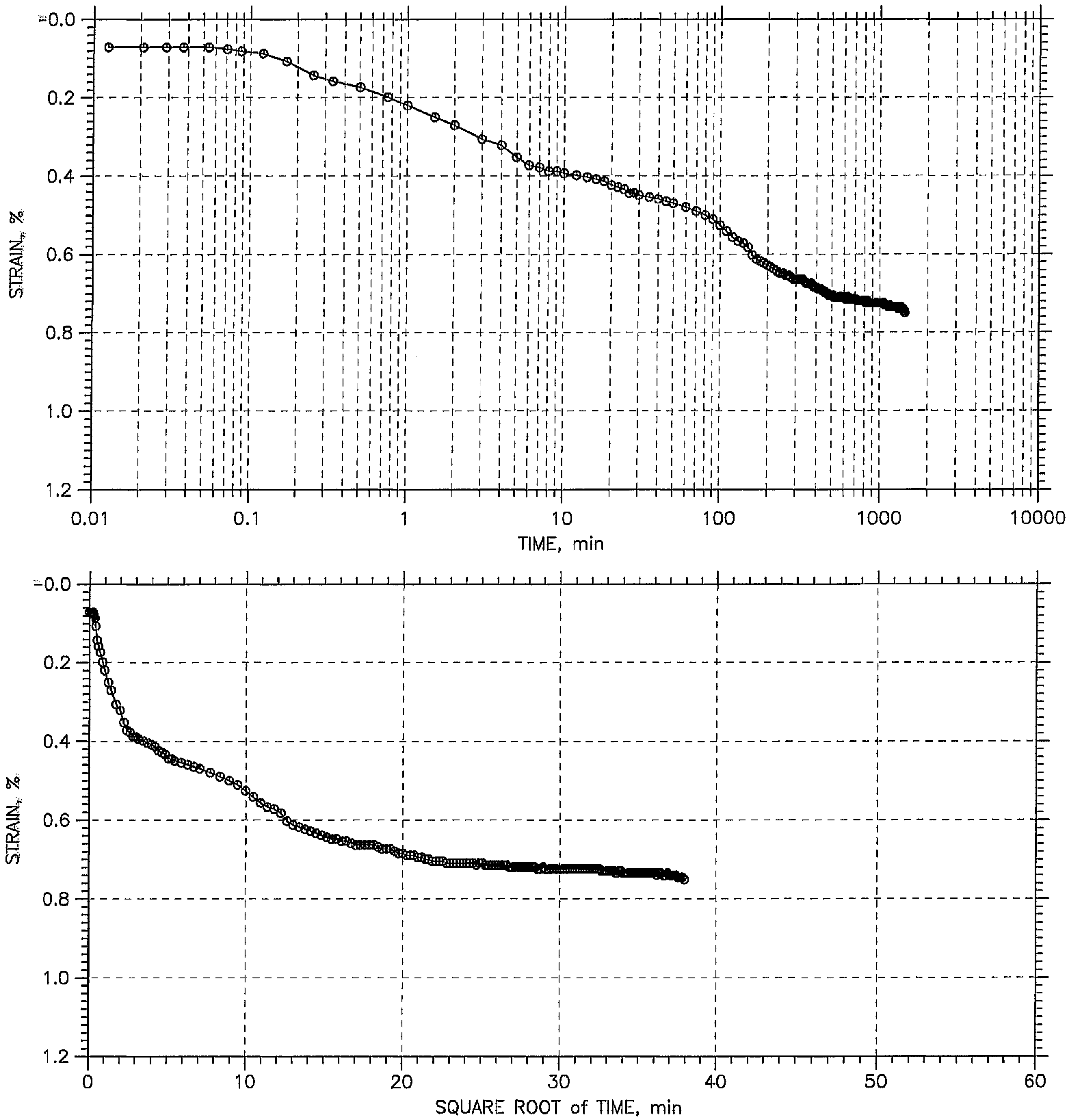
Tue, 04-SEP-2007 15:44:13

CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf



GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

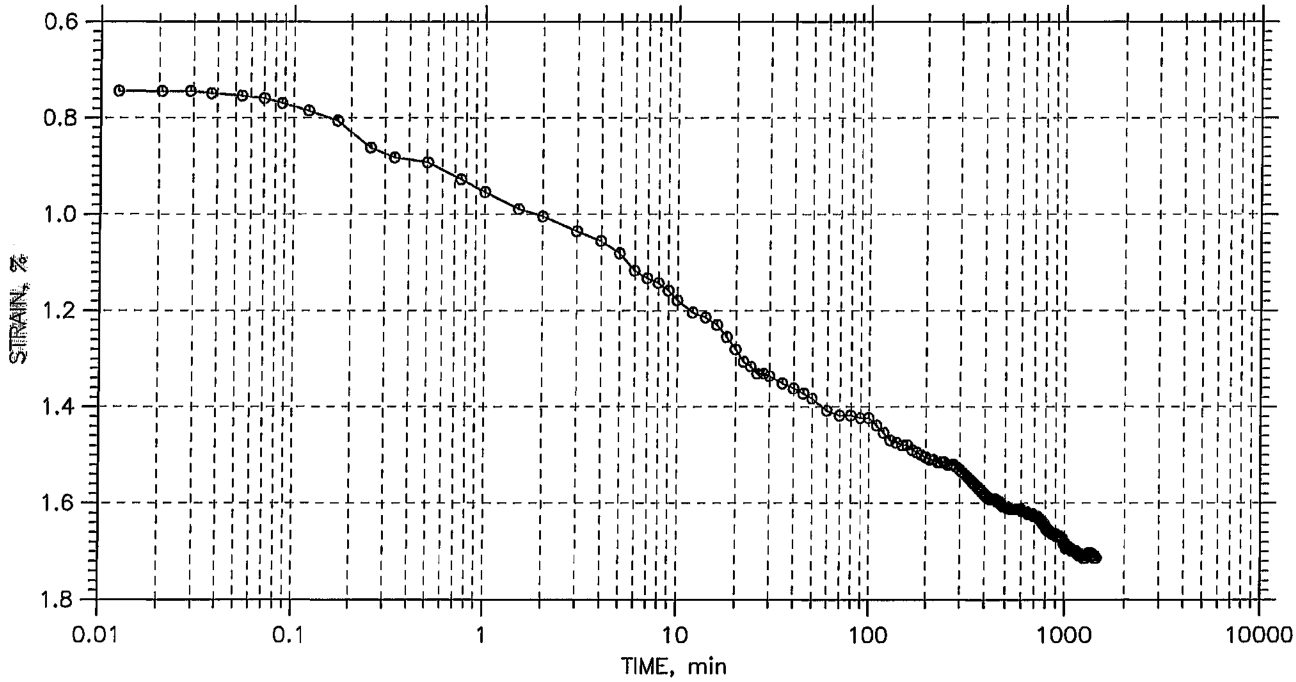
Tue, 04-SEP-2007 15:35:12

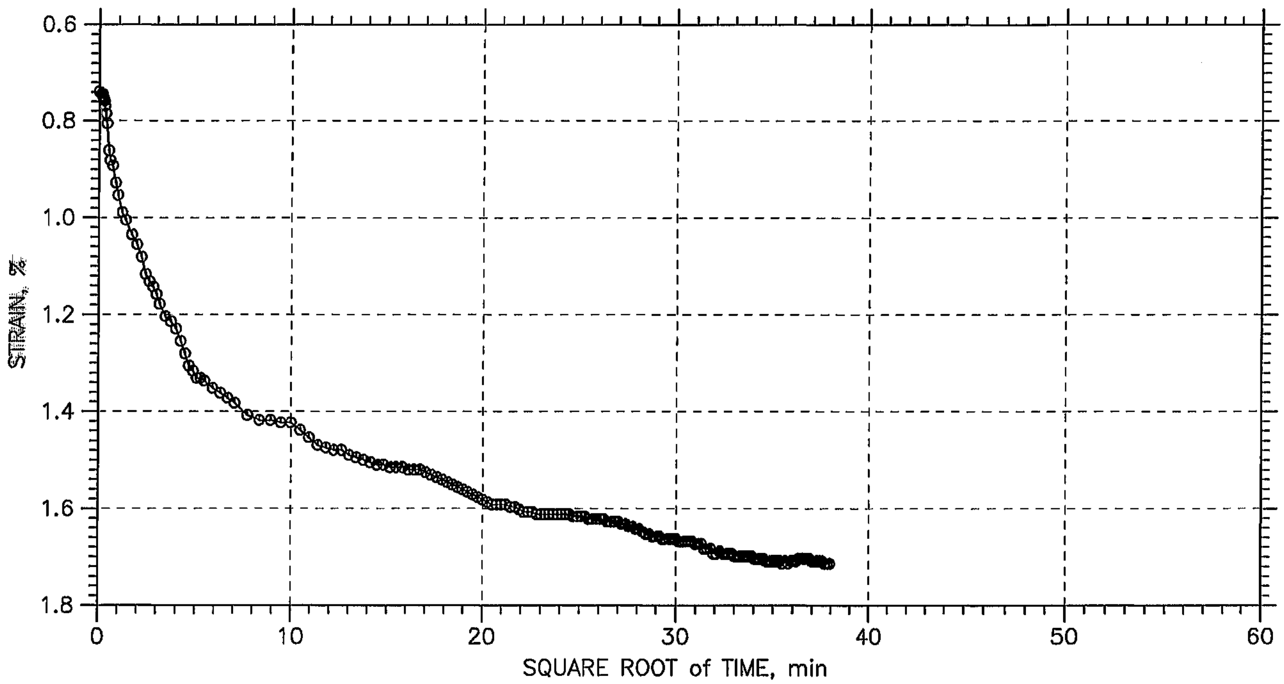
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

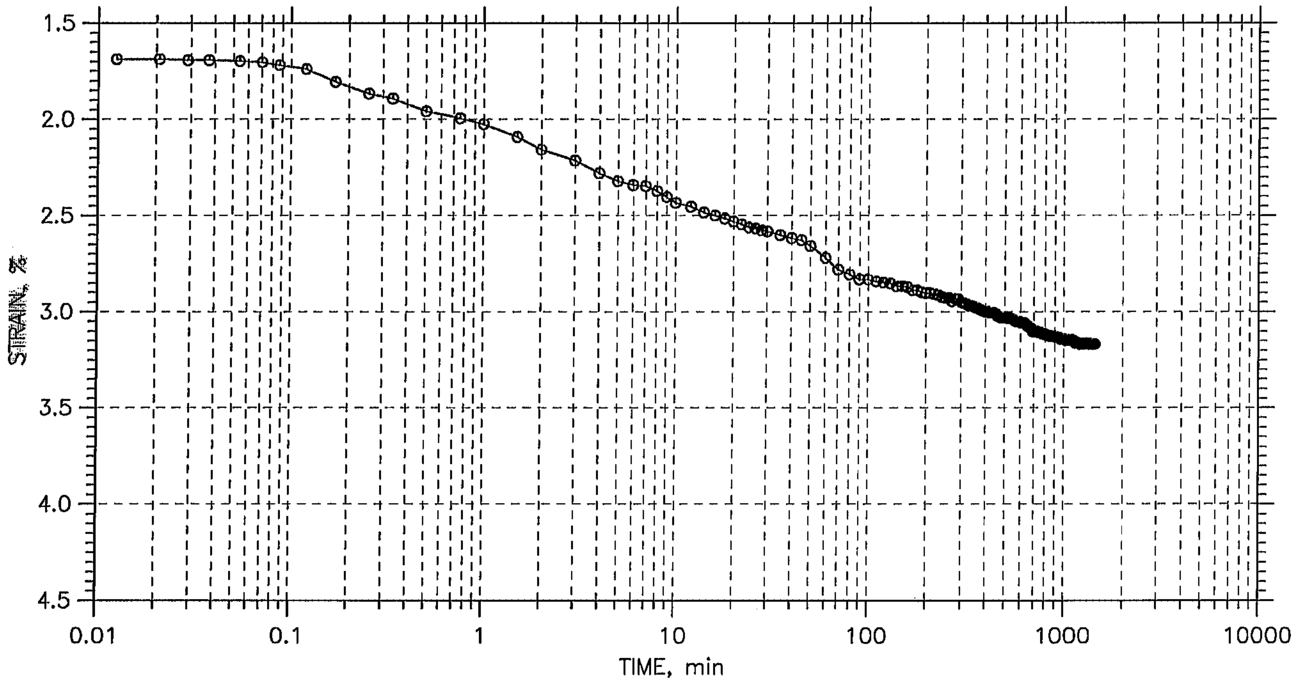
Tue, 04-SEP-2007 15:35:16

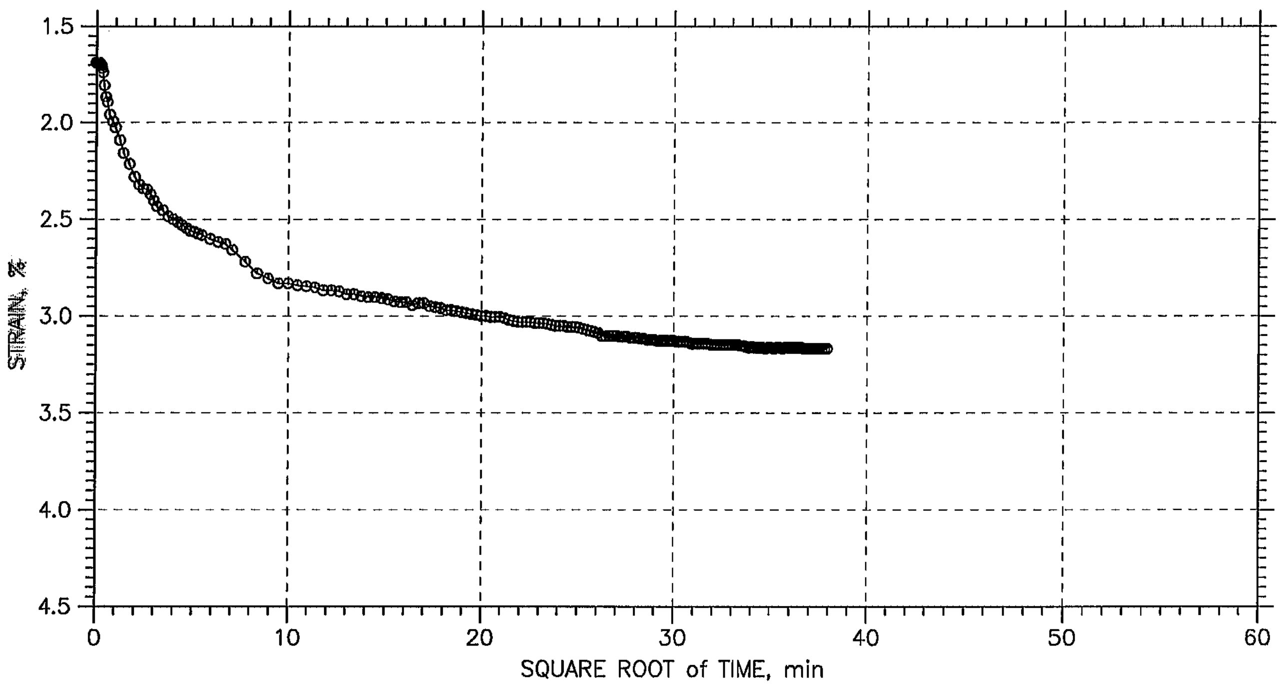
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

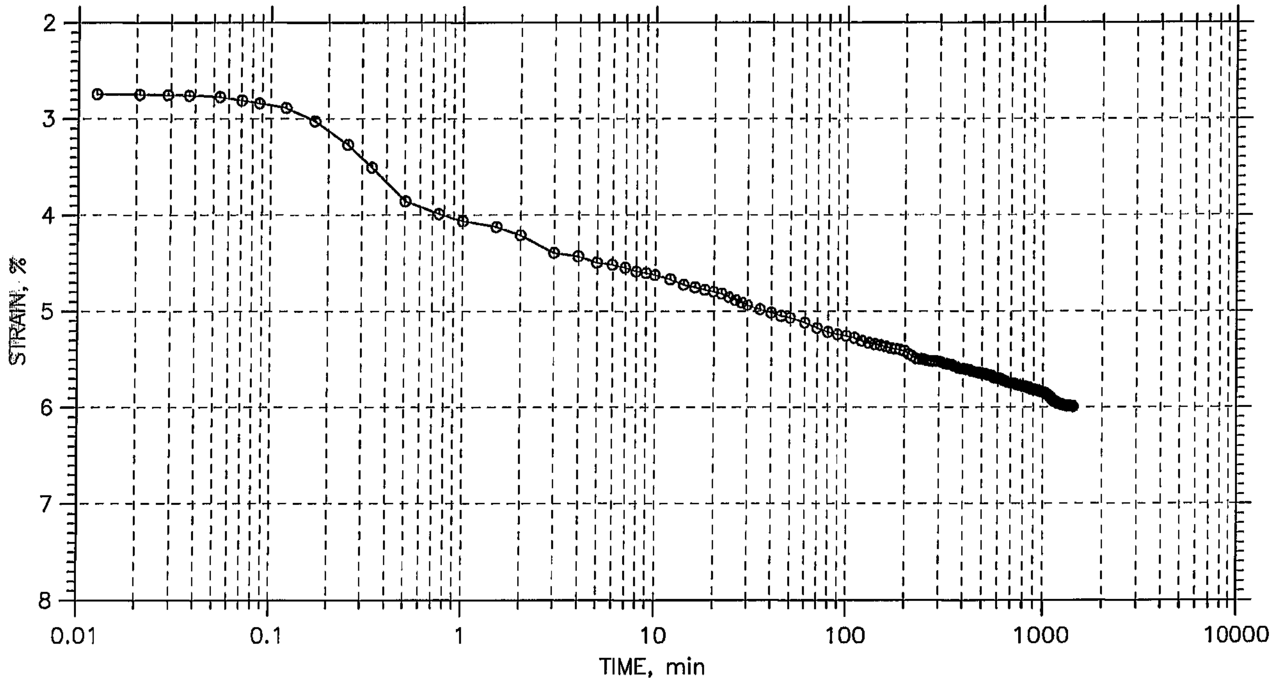
Tue, 04-SEP-2007 15:35:20

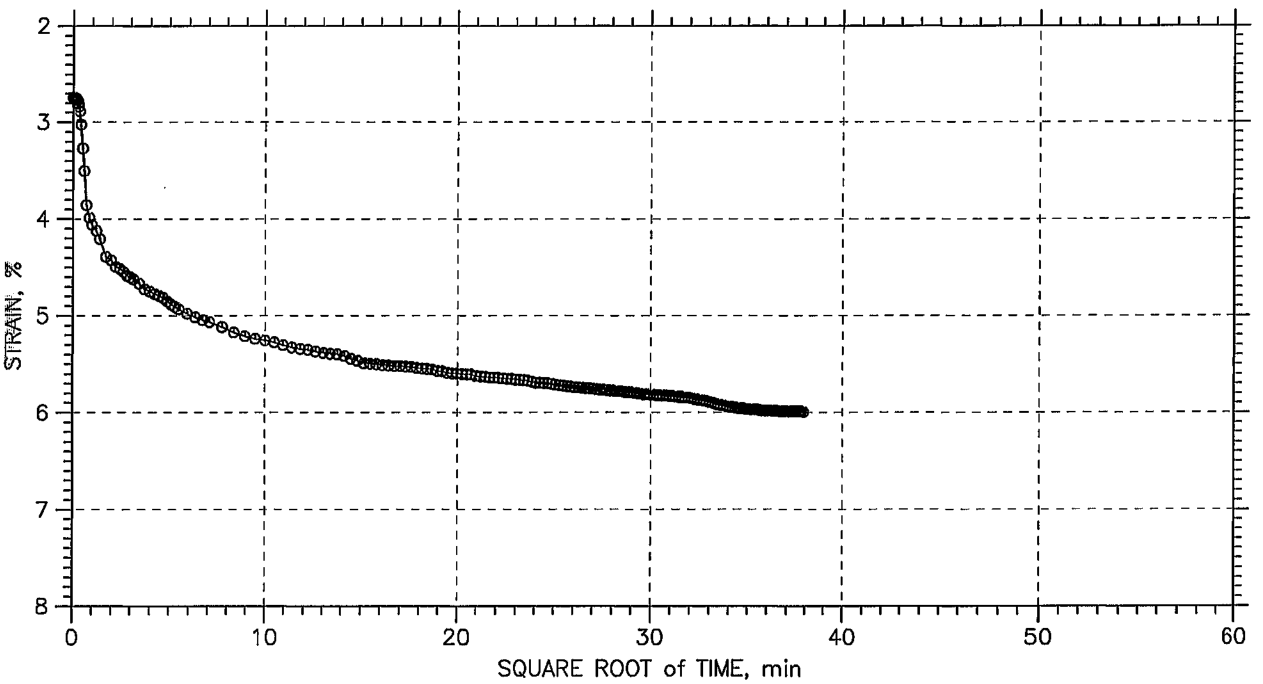
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

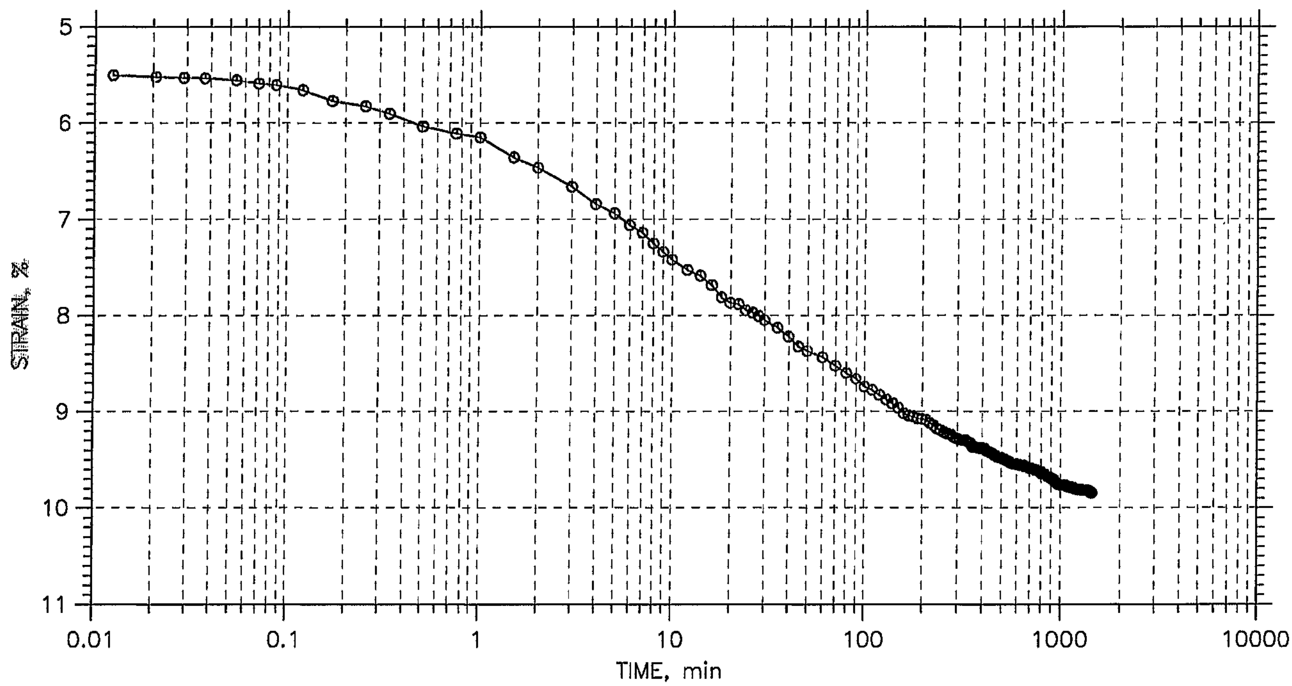
Tue, 04-SEP-2007 15:35:23

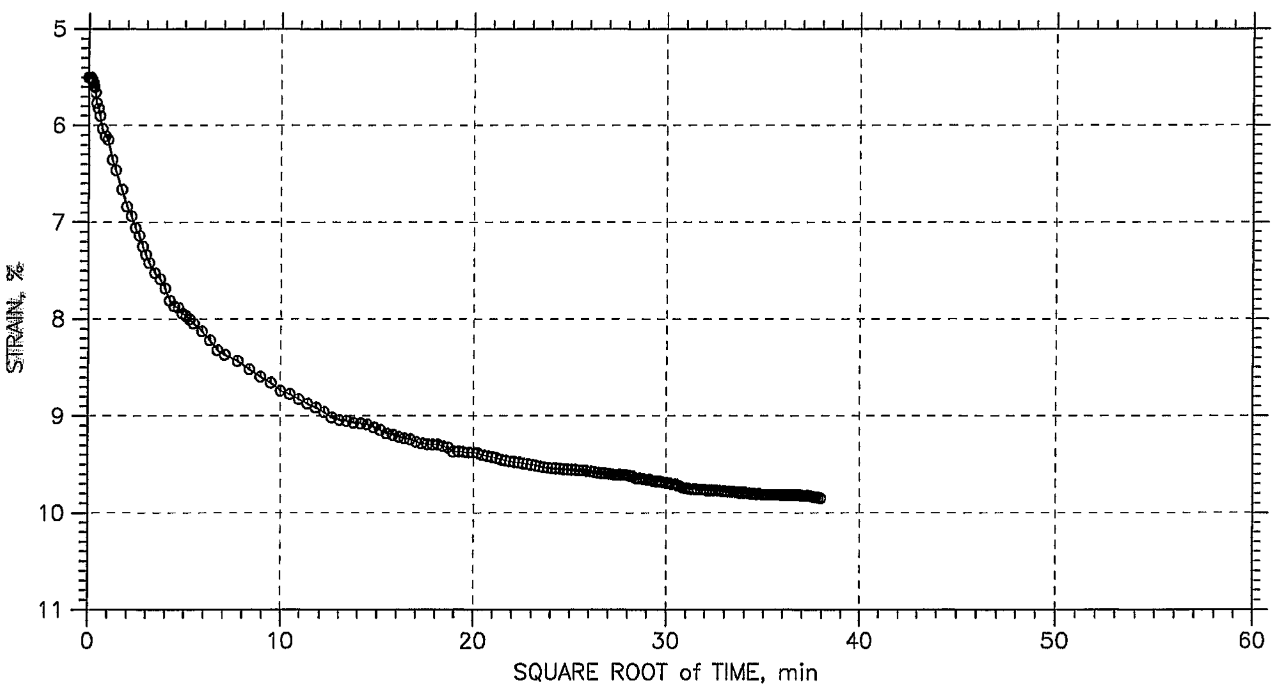
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

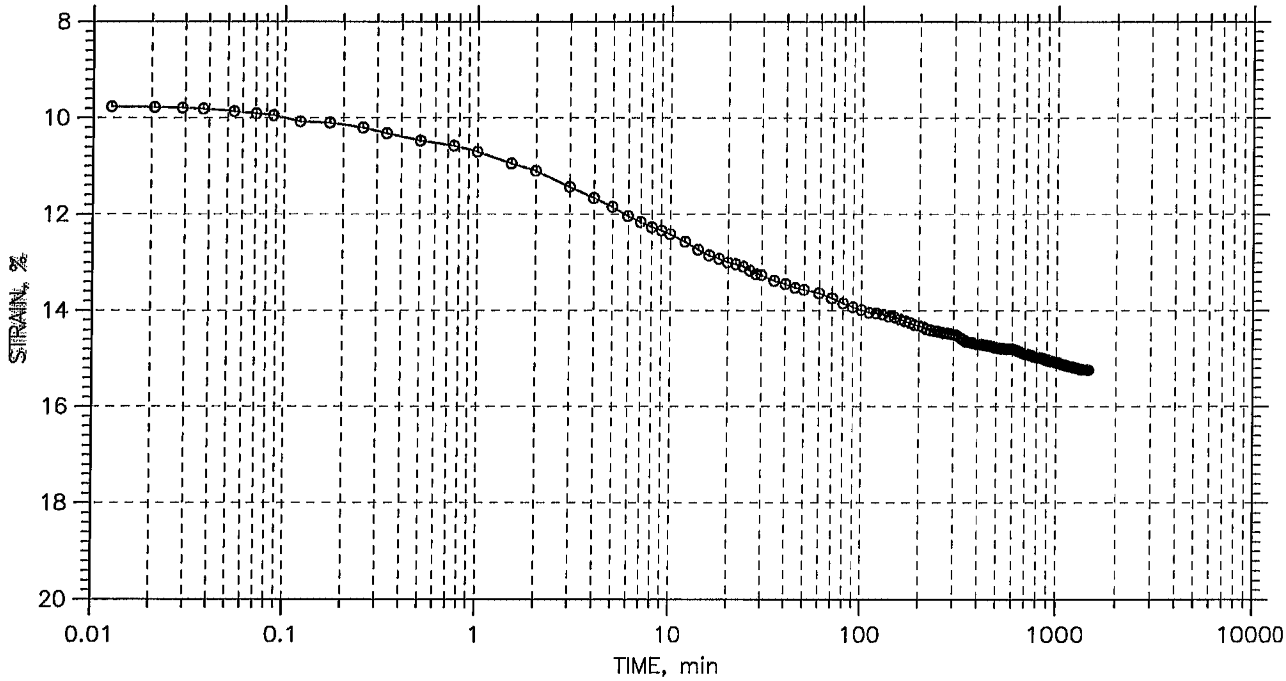
Tue, 04-SEP-2007 15:35:27

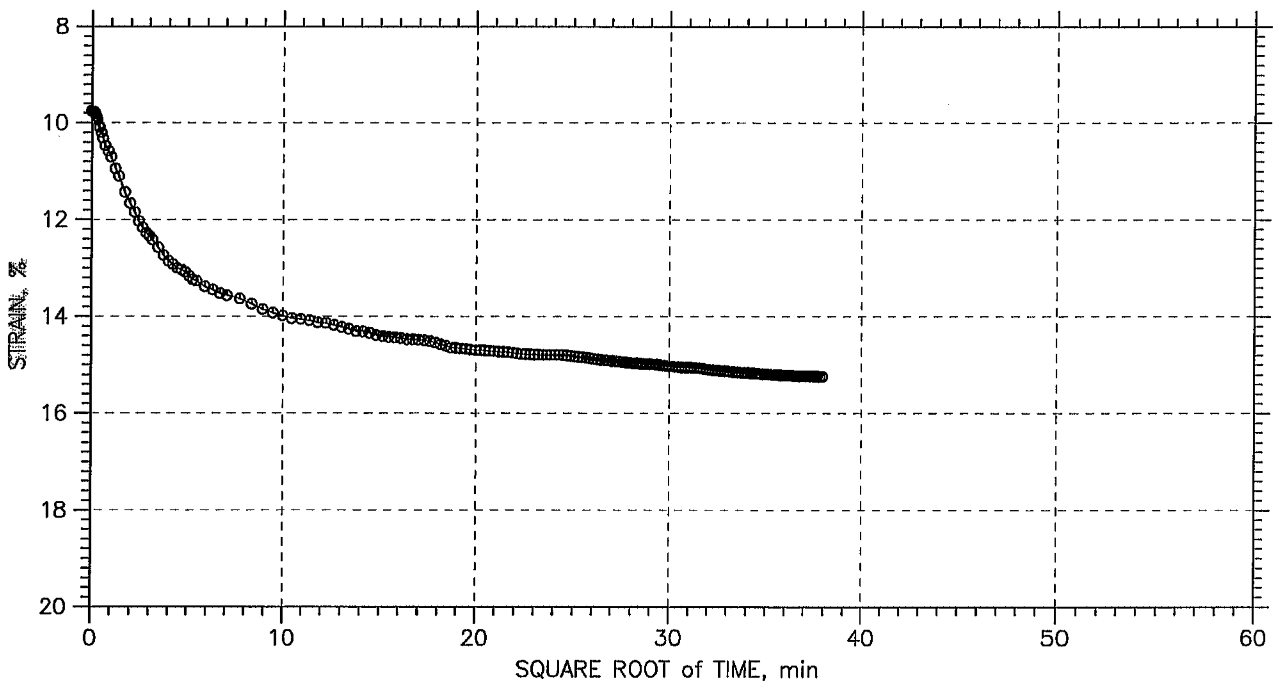
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

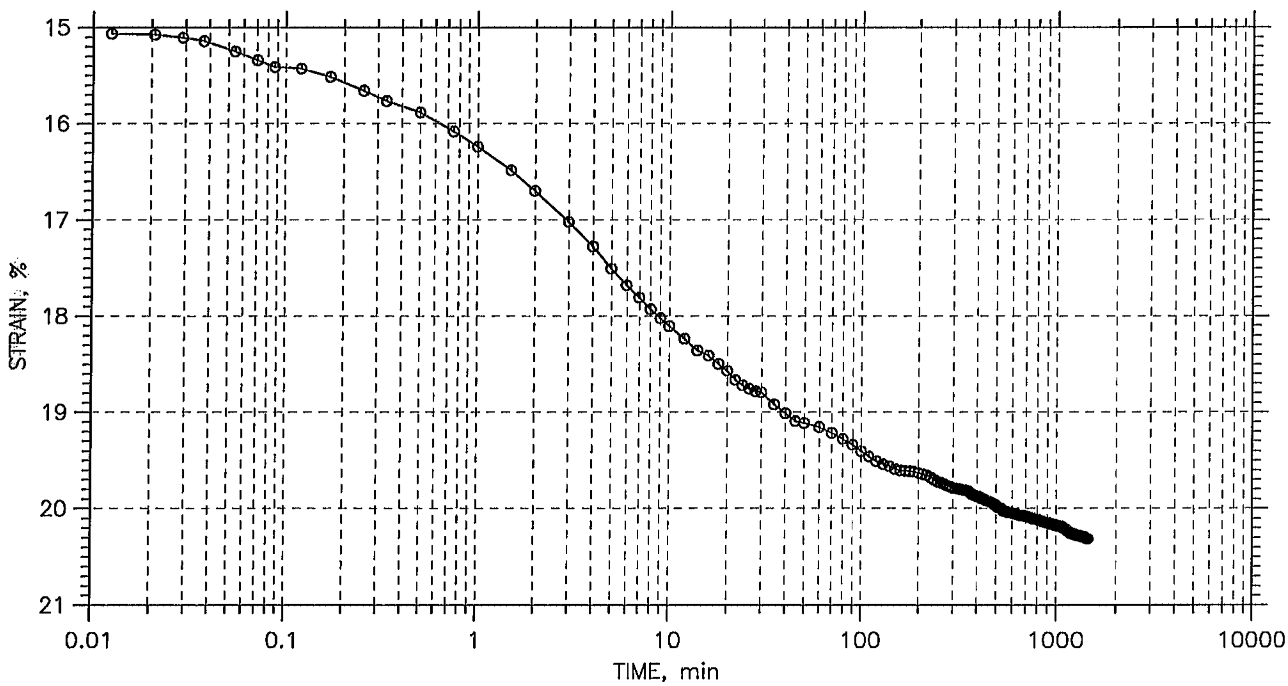
Tue, 04-SEP-2007 15:35:30

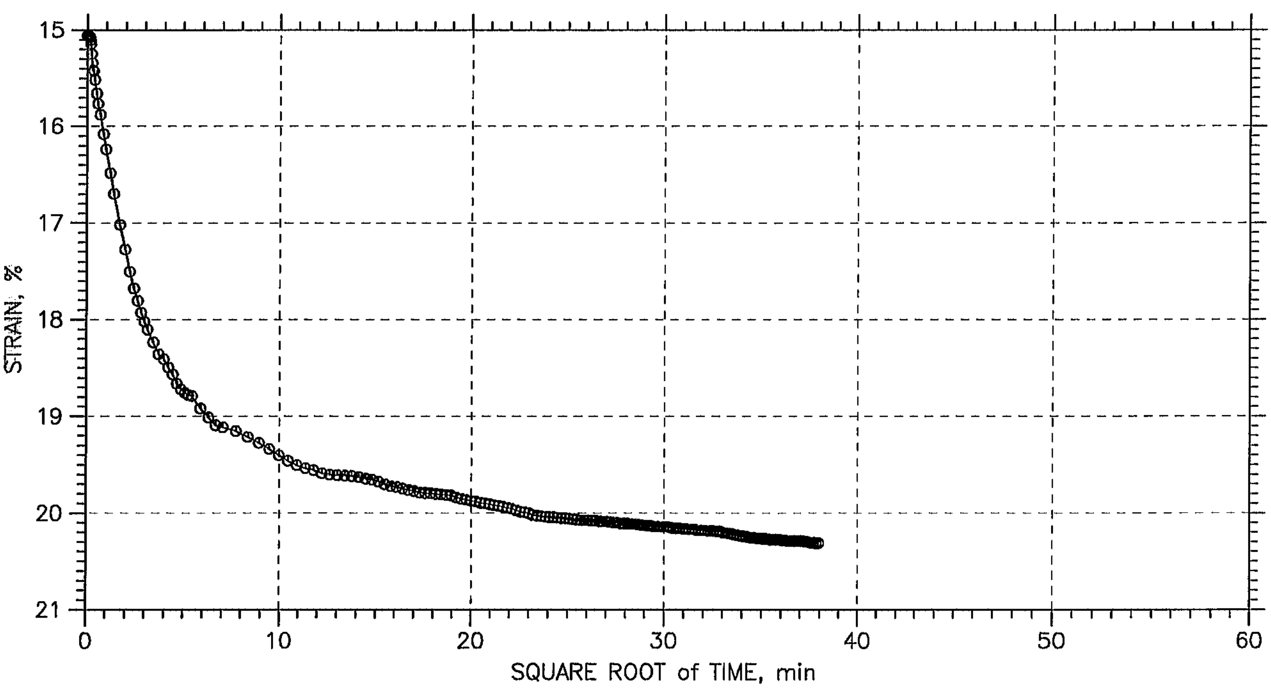
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

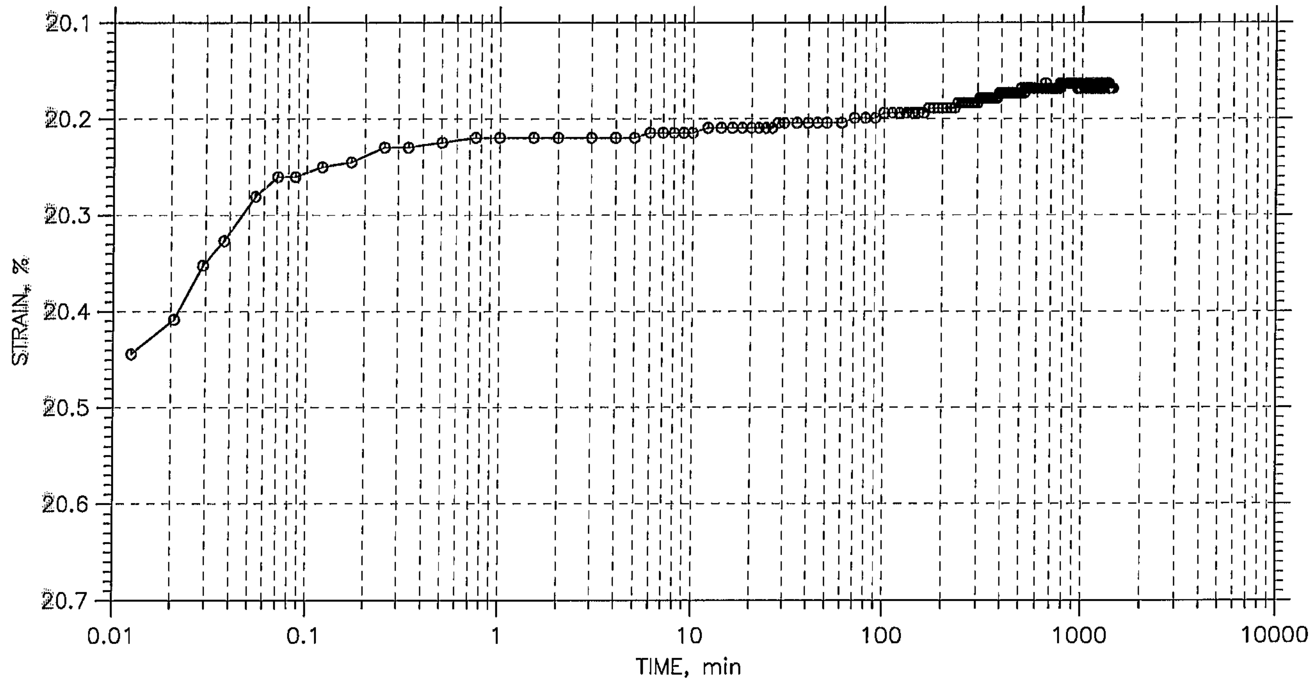
Tue, 04-SEP-2007 15:35:34

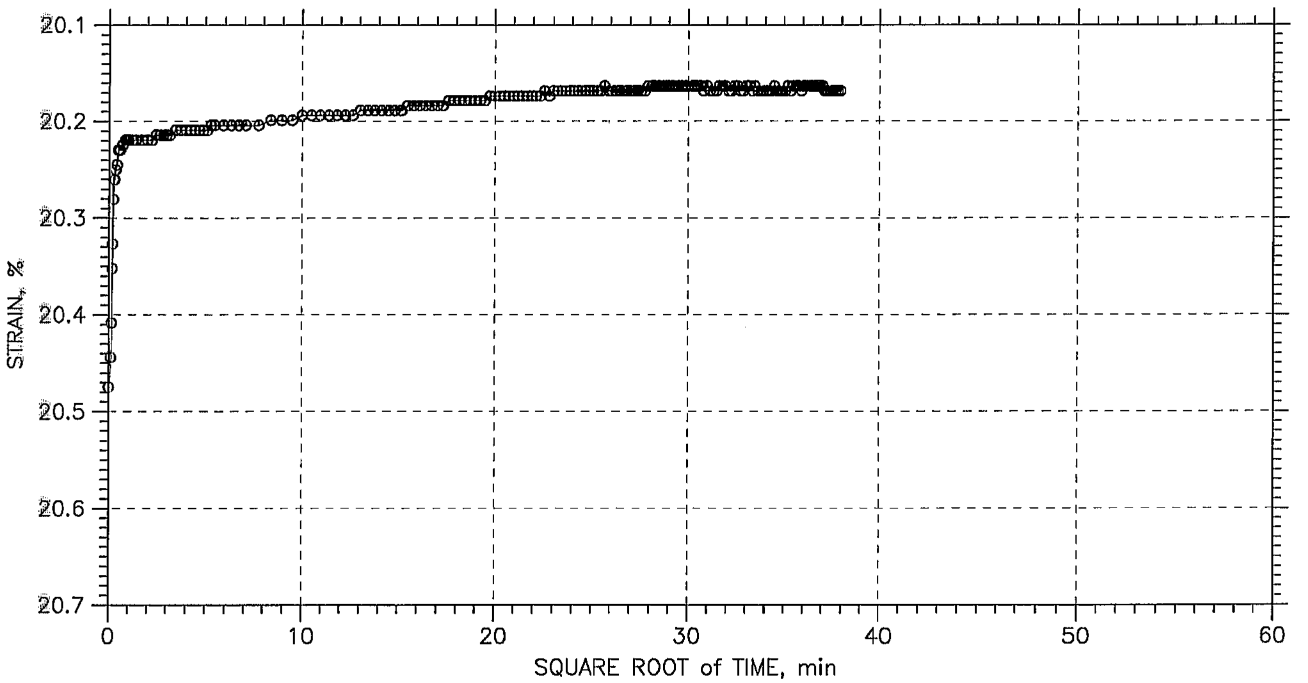
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

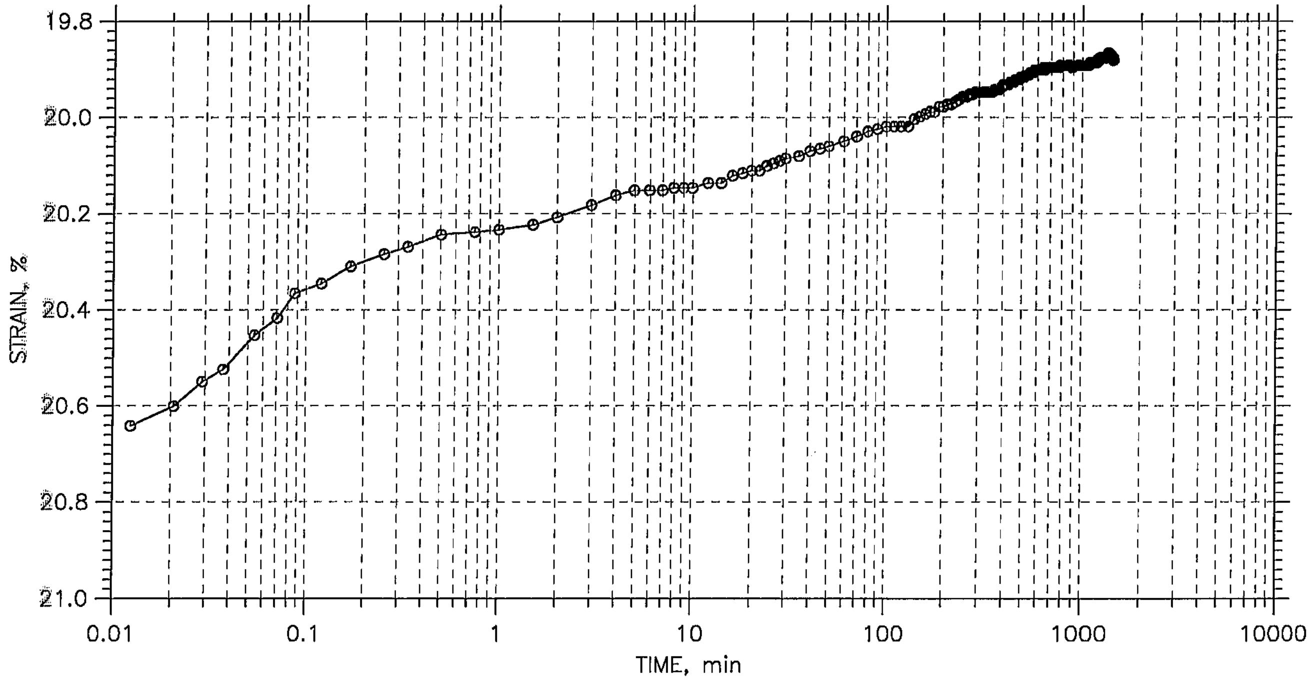
Tue, 04-SEP-2007 15:35:37

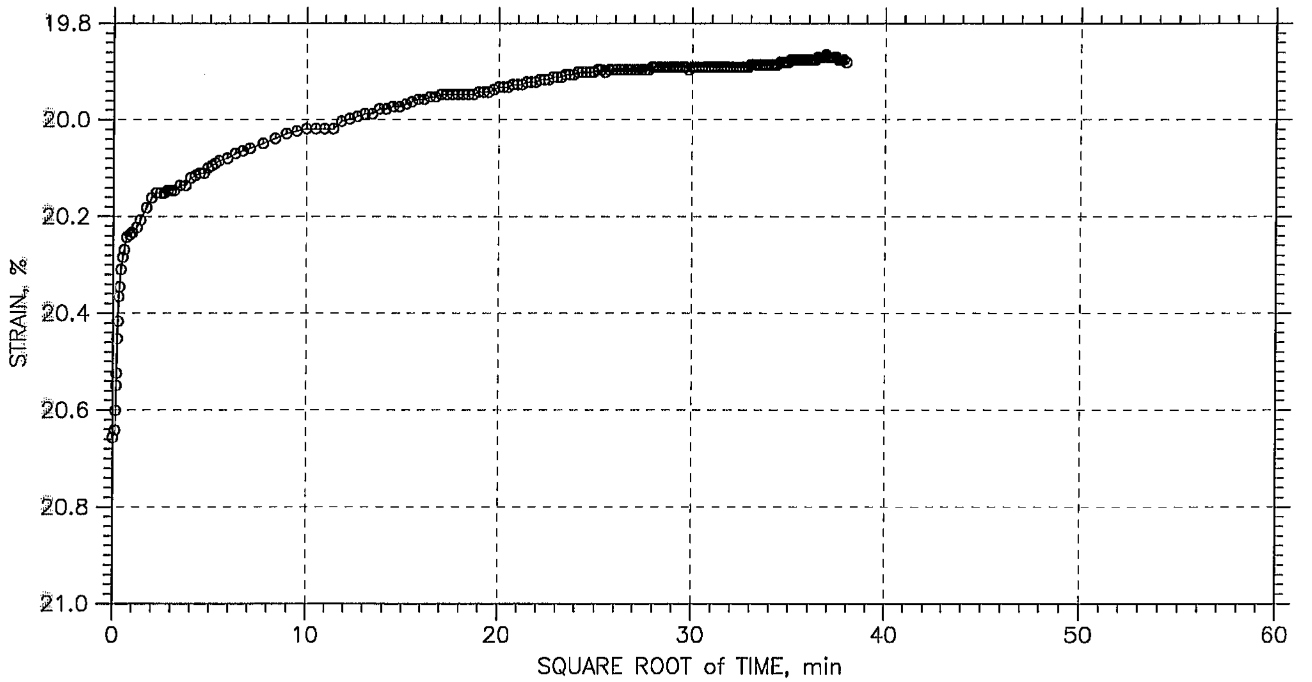
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

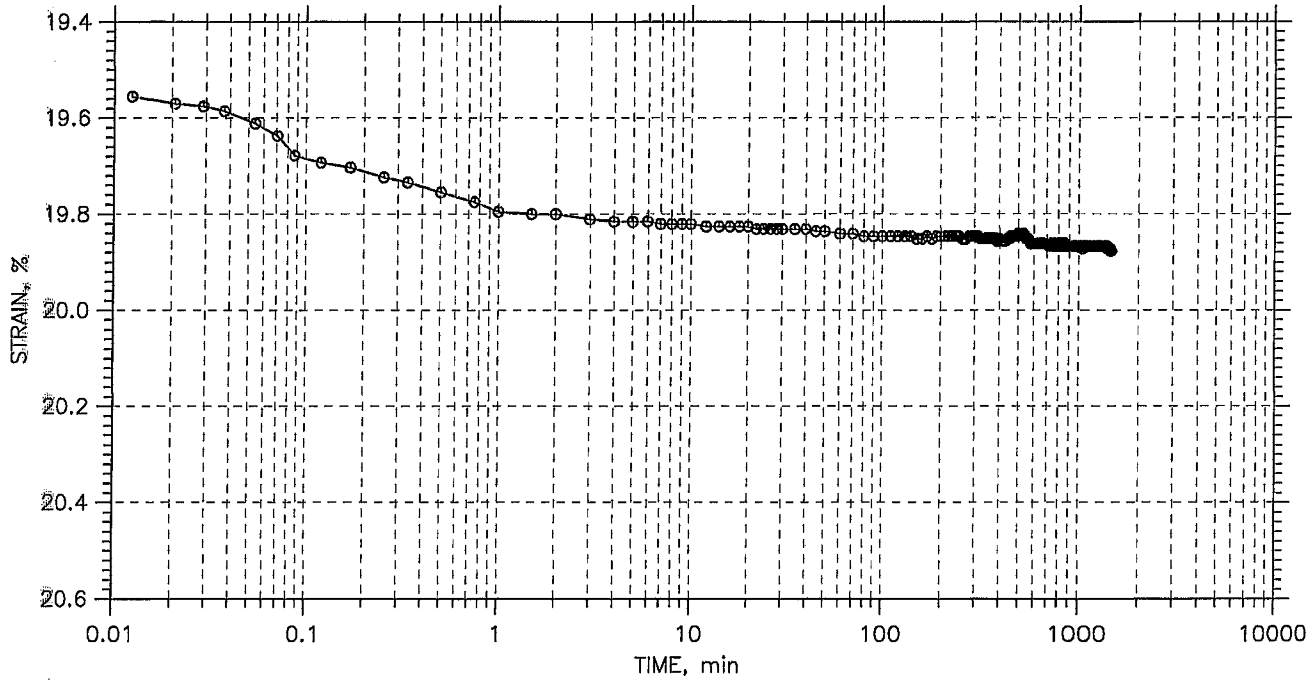
Tue, 04-SEP-2007 15:35:41

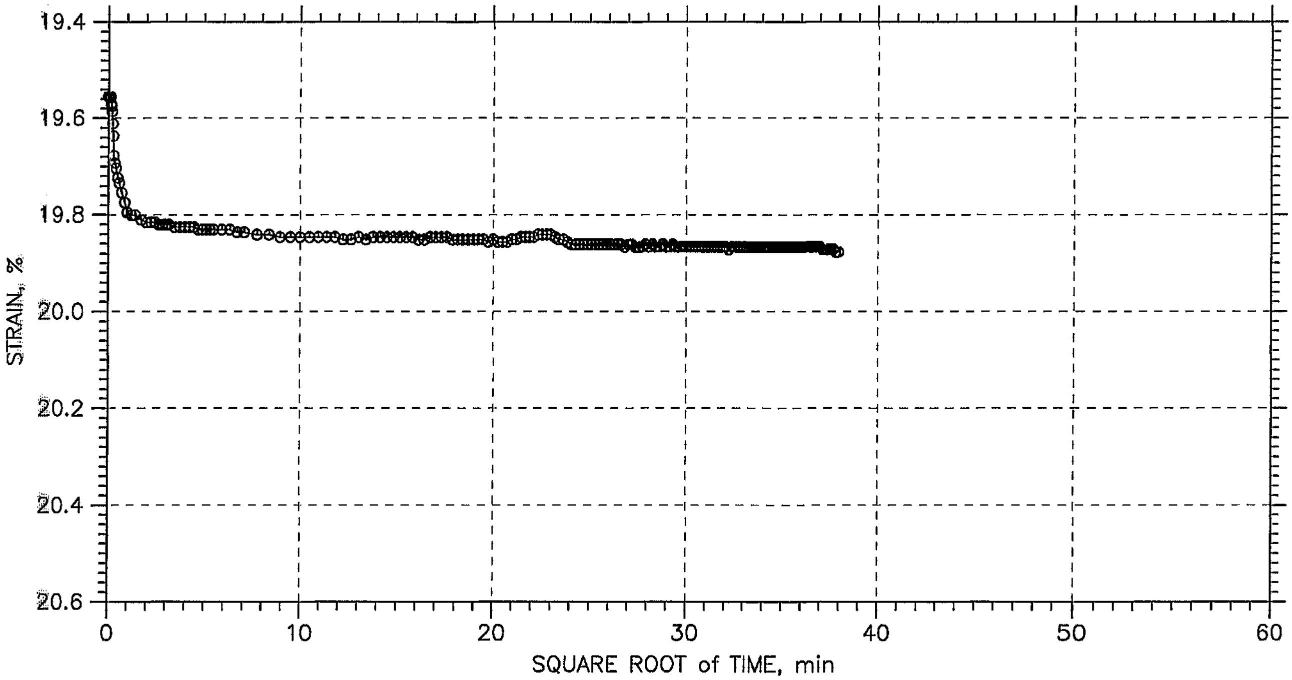
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

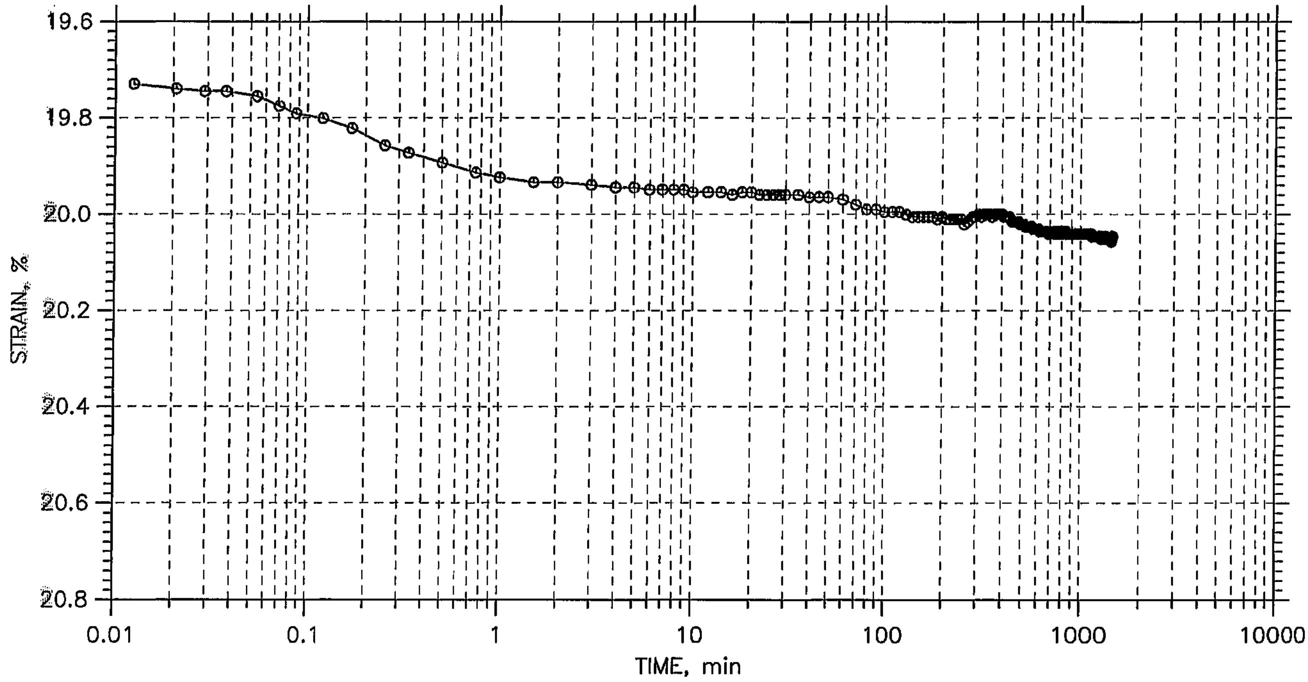
Tue, 04-SEP-2007 15:44:45

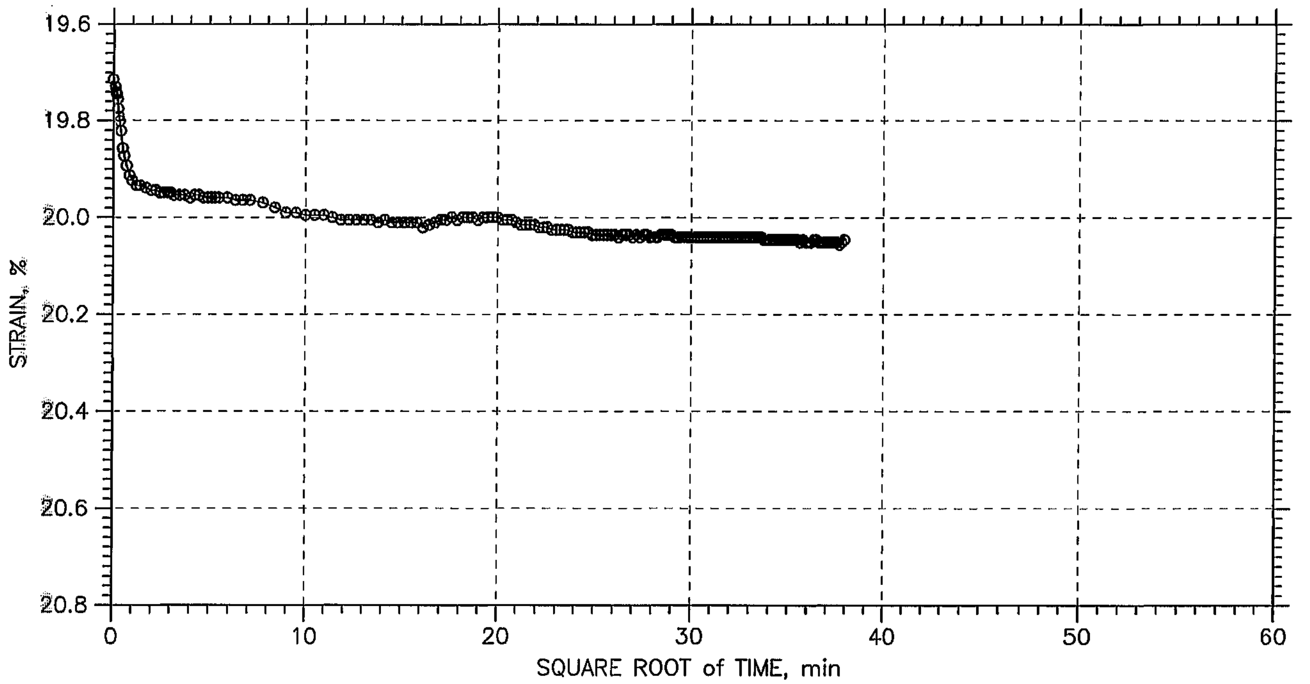
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

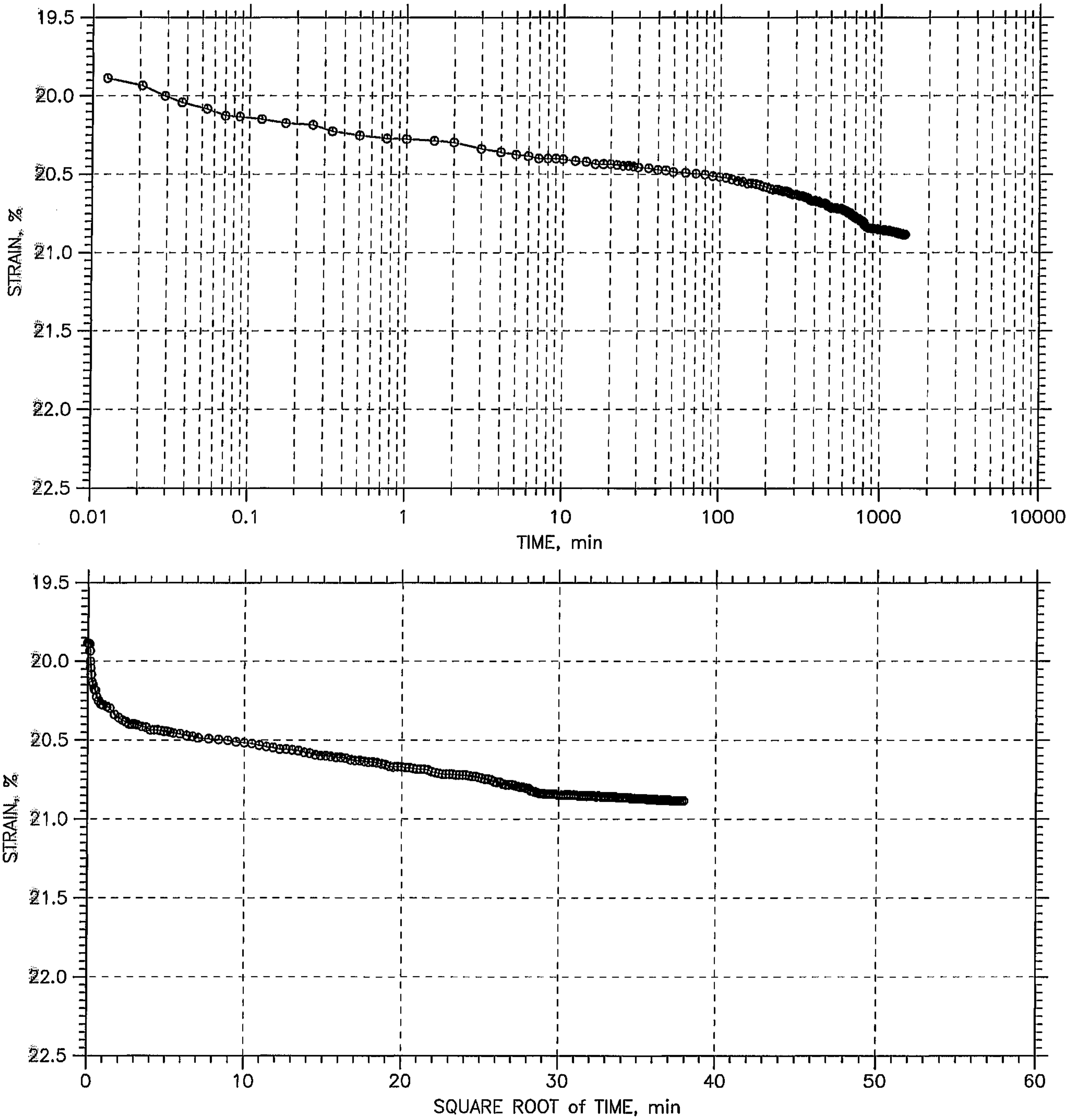
Tue, 04-SEP-2007 15:45:03

CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf



GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

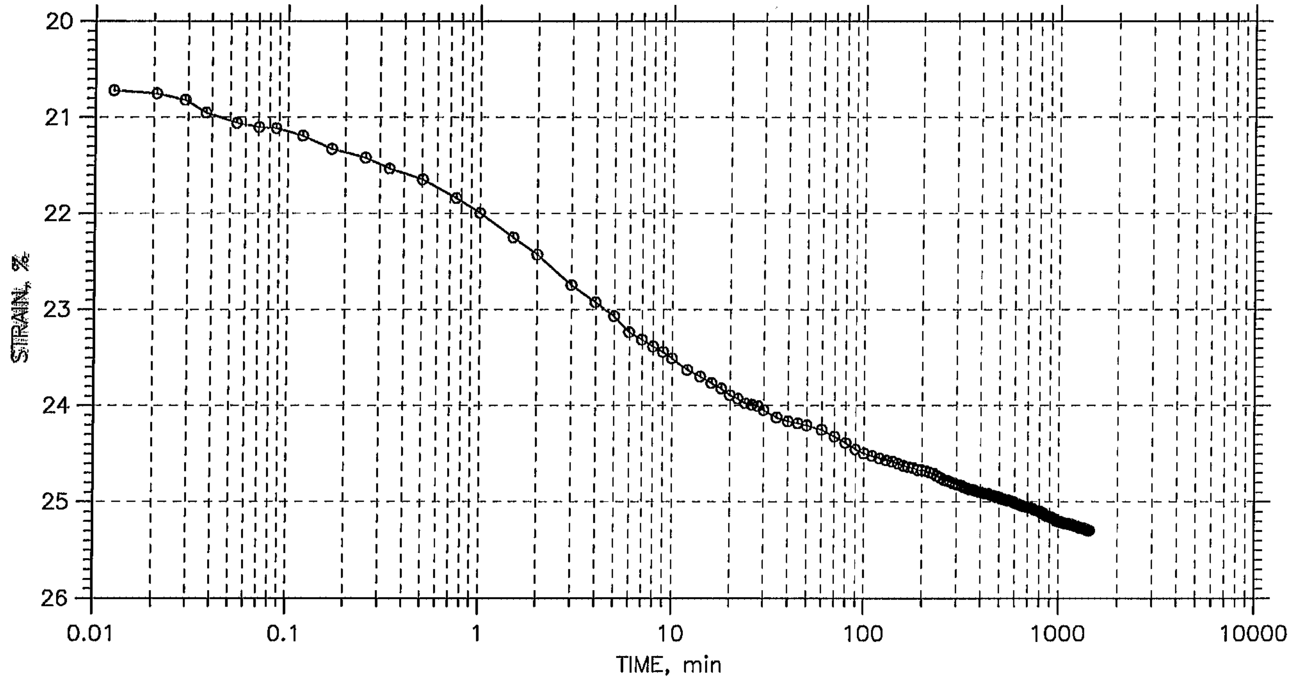
Tue, 04-SEP-2007 15:45:23

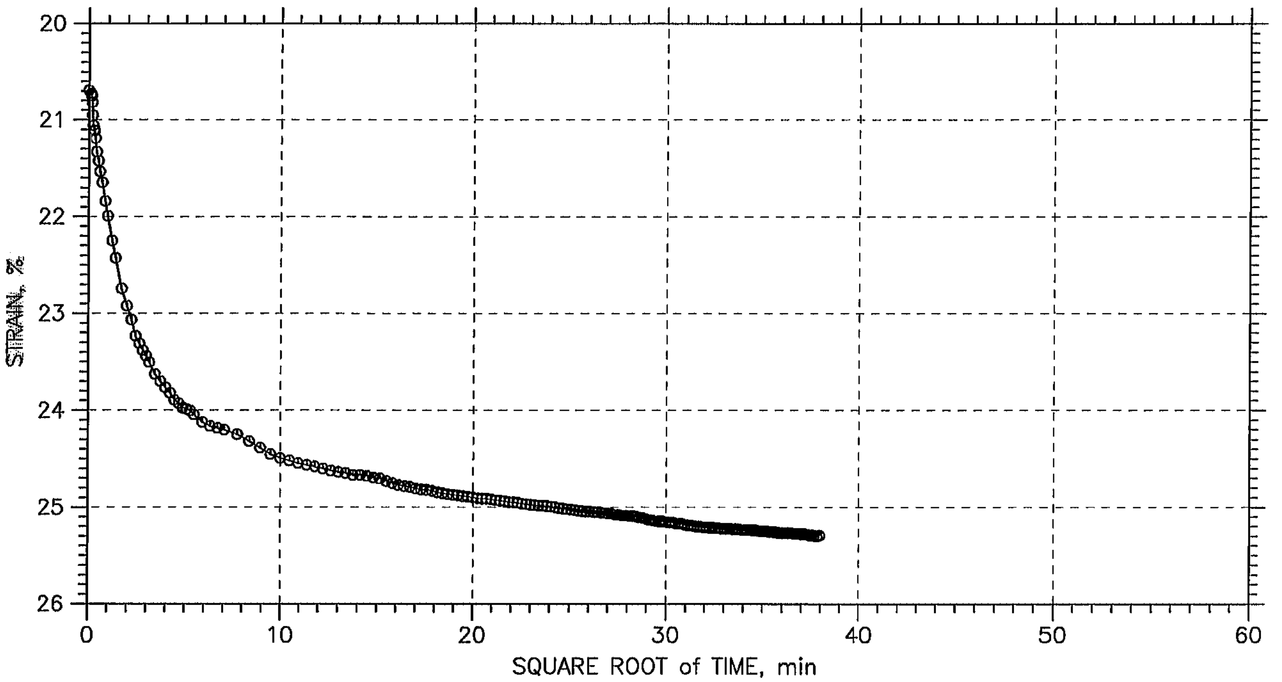
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

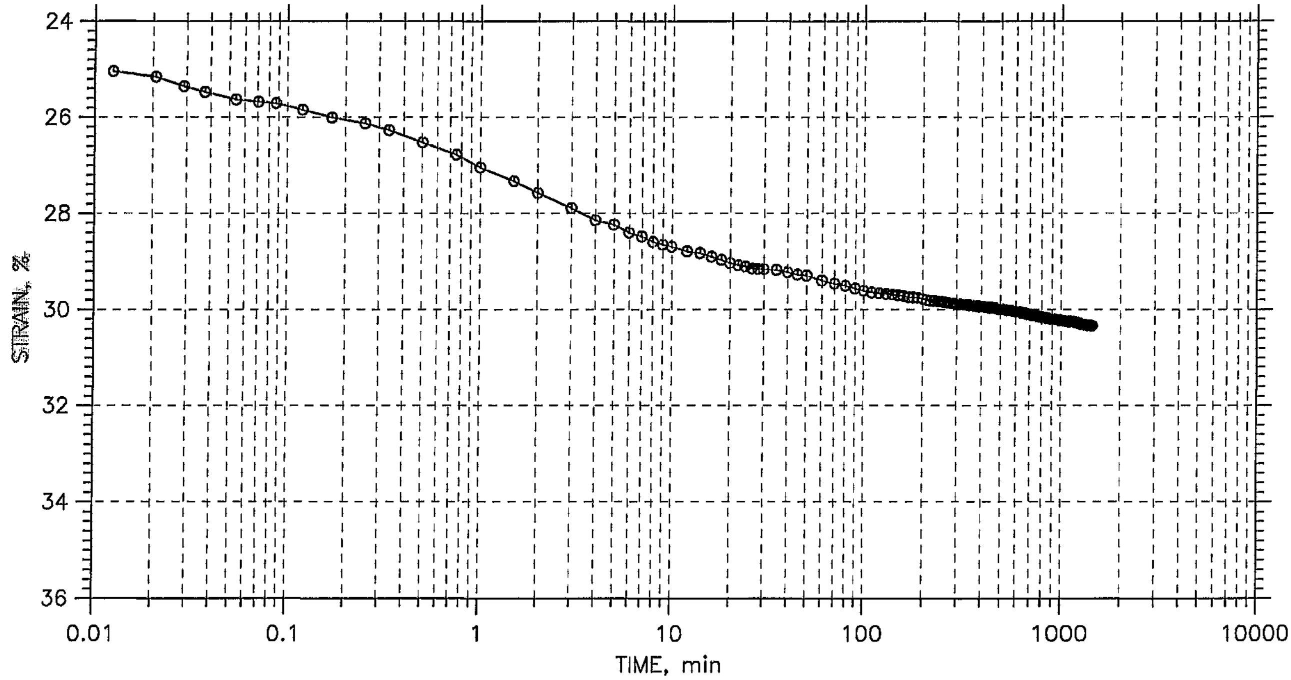
Tue, 04-SEP-2007 15:35:53

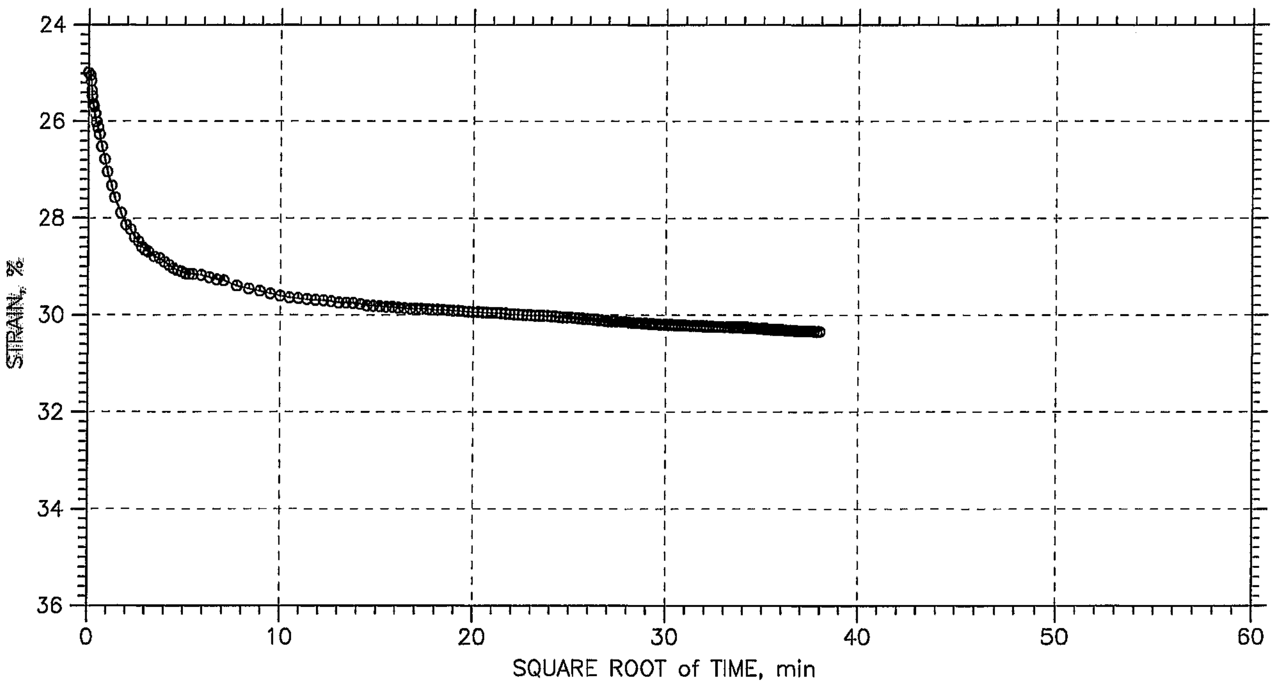
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

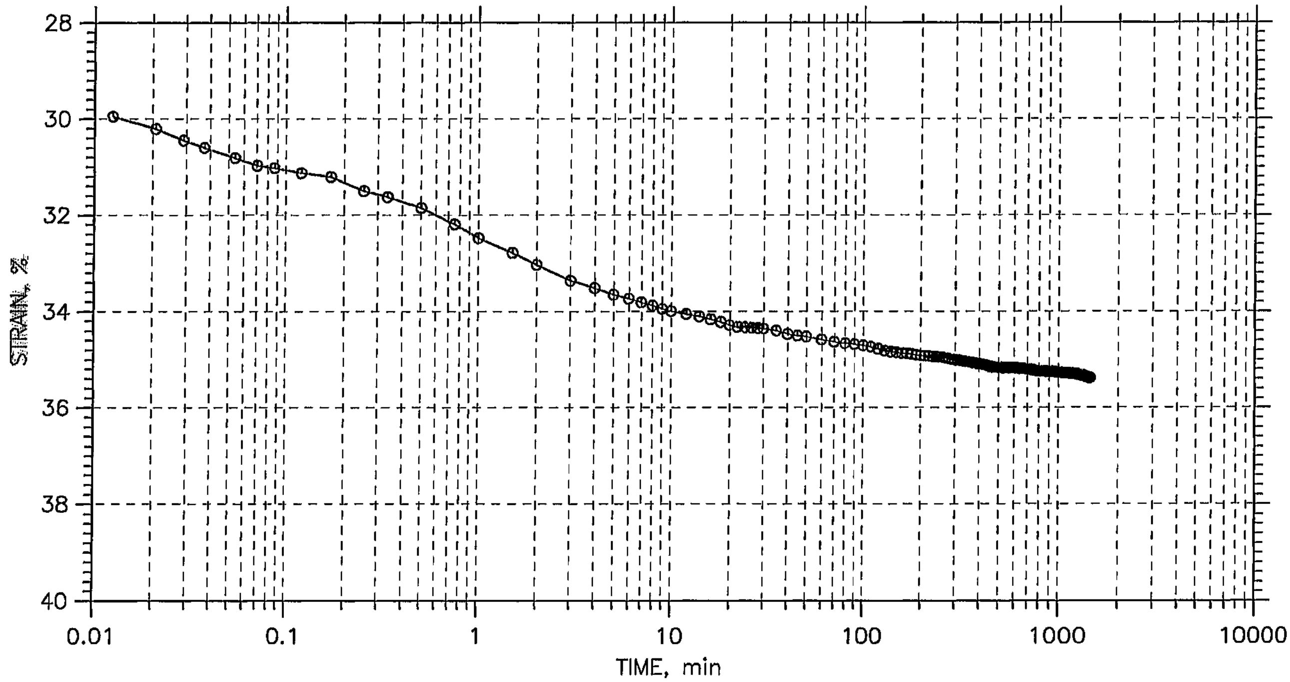
Tue, 04-SEP-2007 15:35:56

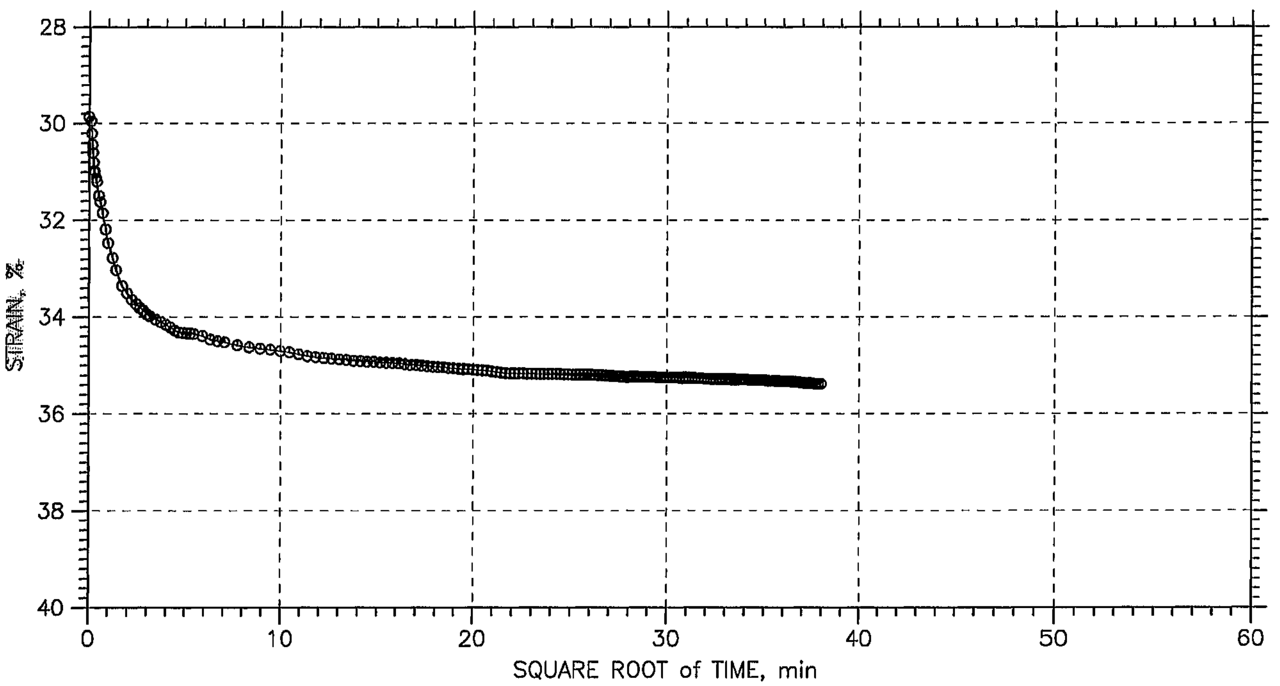
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

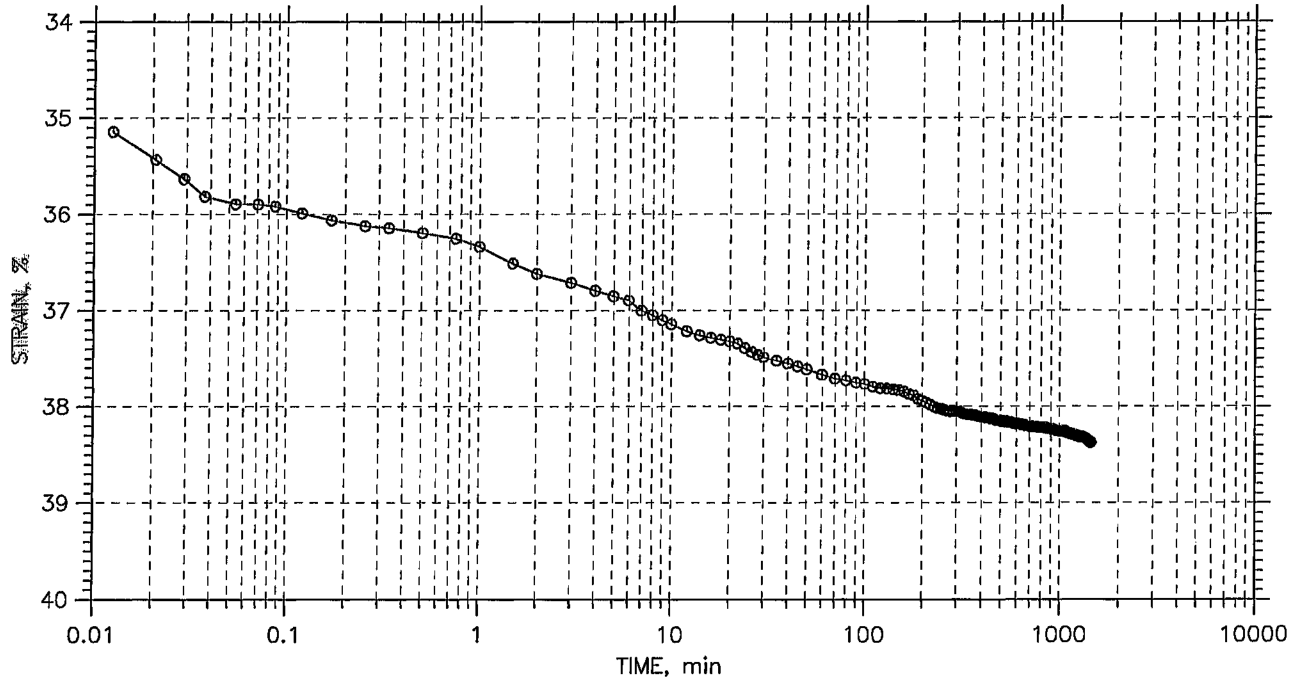
Tue, 04-SEP-2007 15:36:00

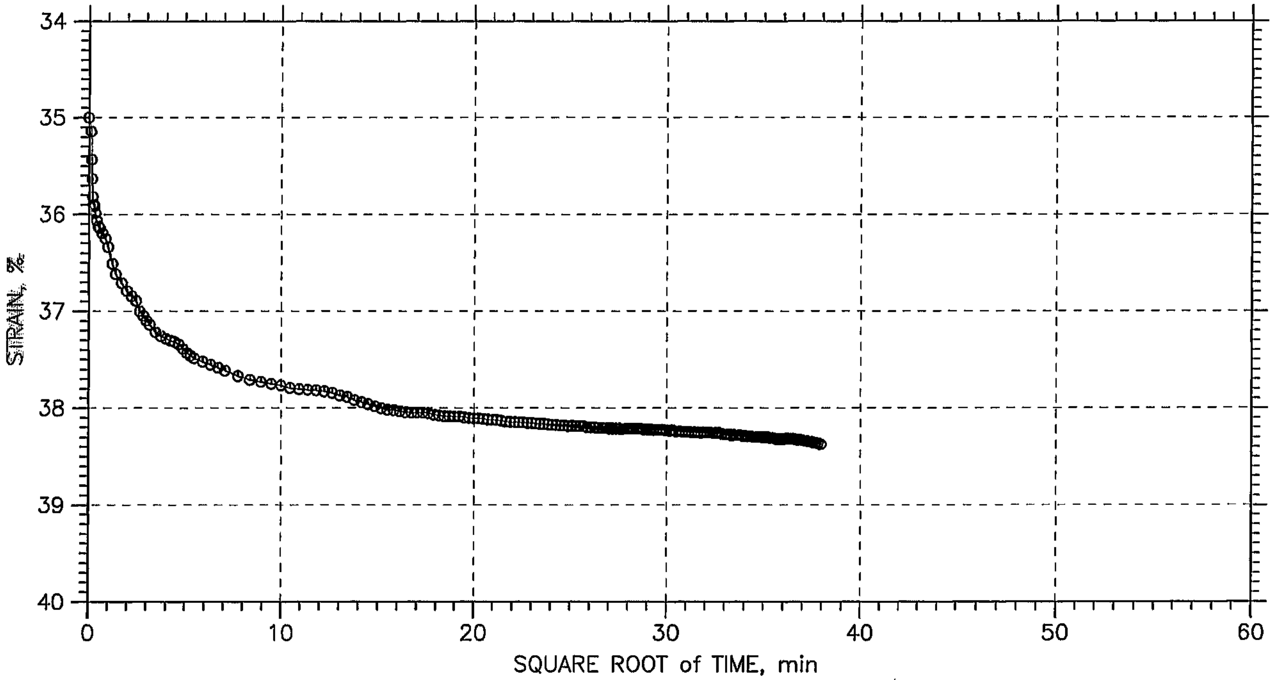
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

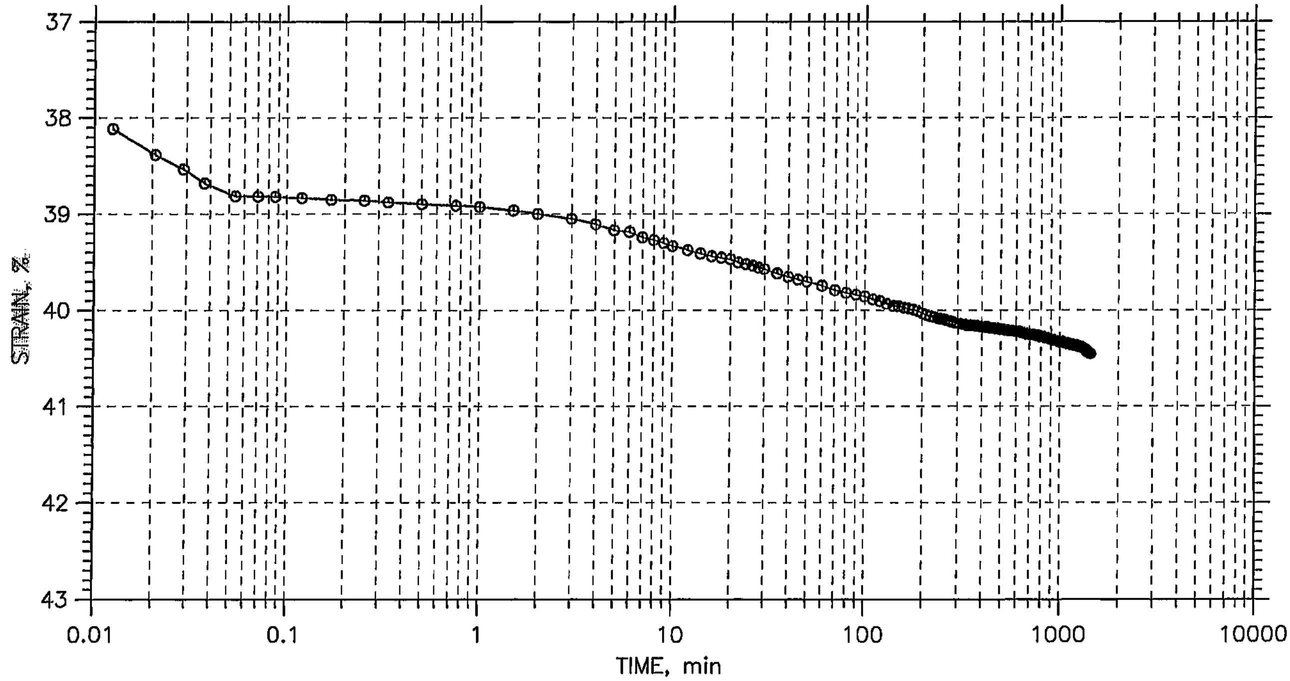
Tue, 04-SEP-2007 15:36:05

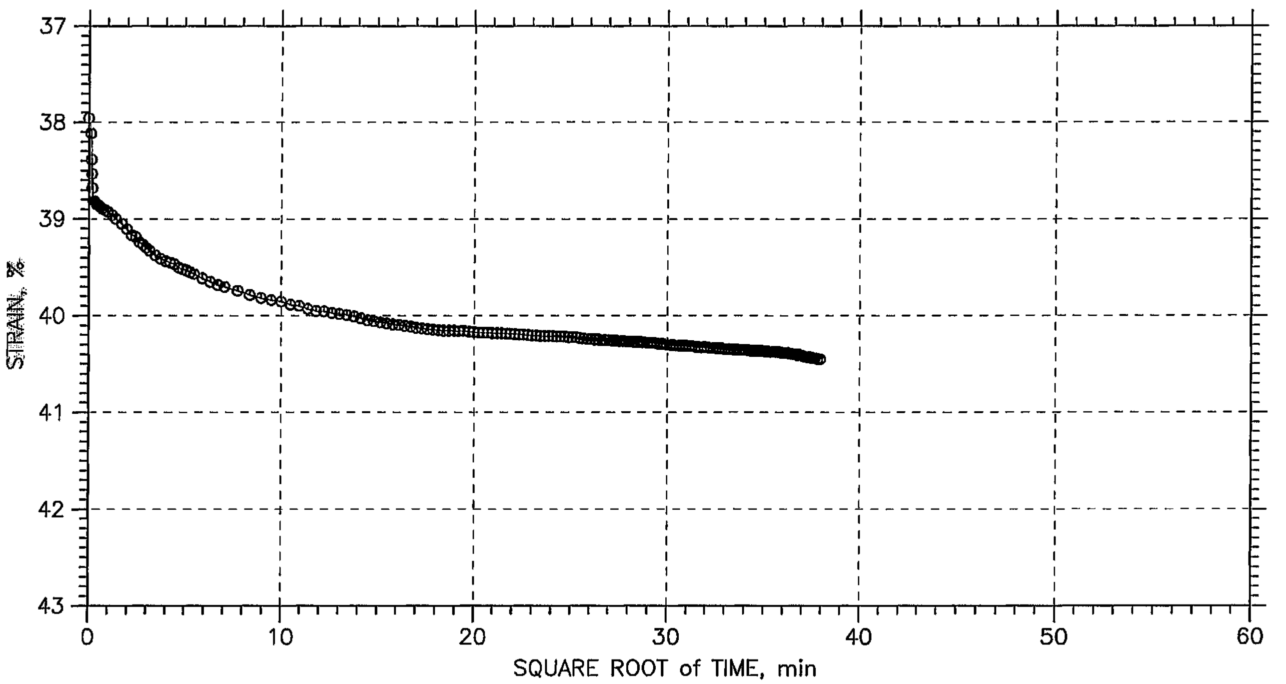
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

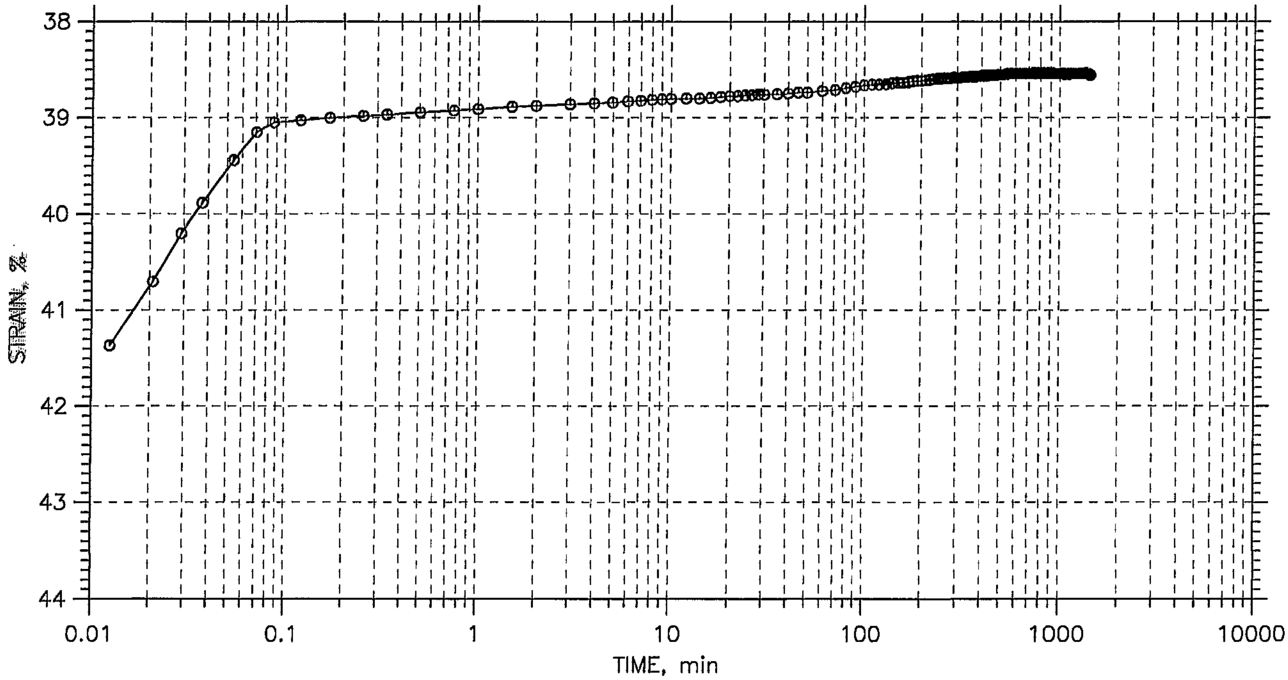
Tue, 04-SEP-2007 15:45:50

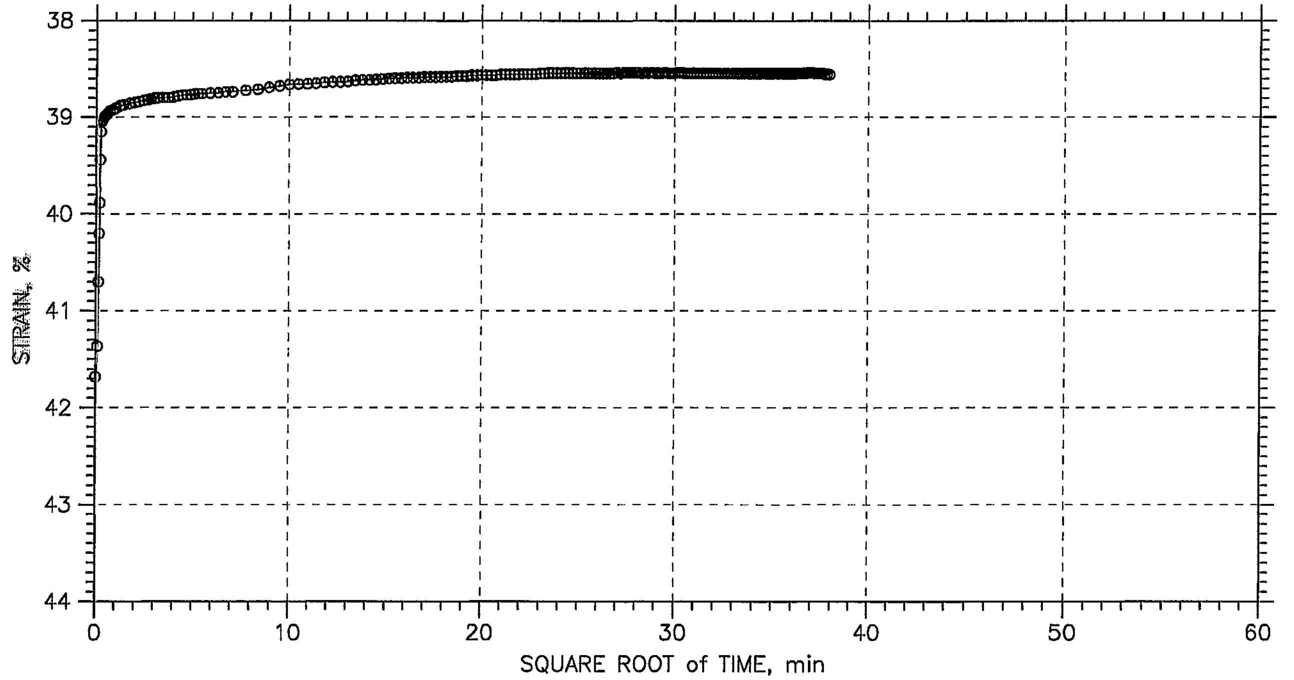
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

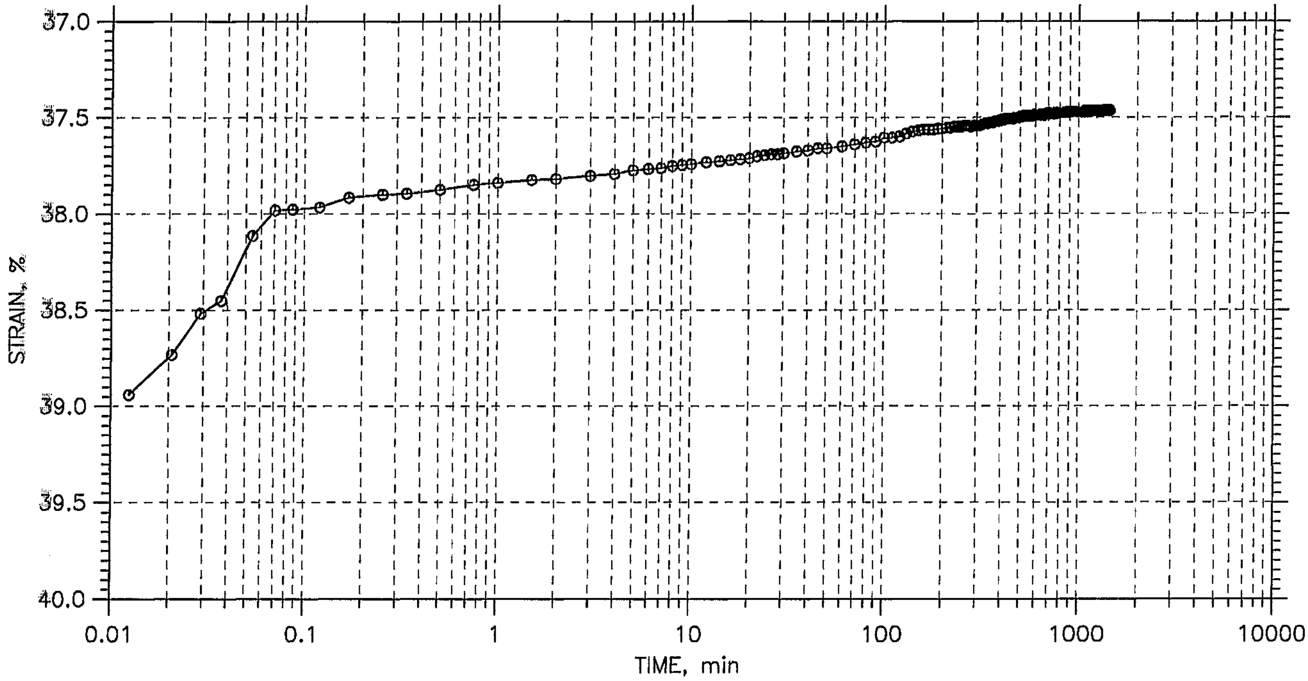
Tue, 04-SEP-2007 15:36:11

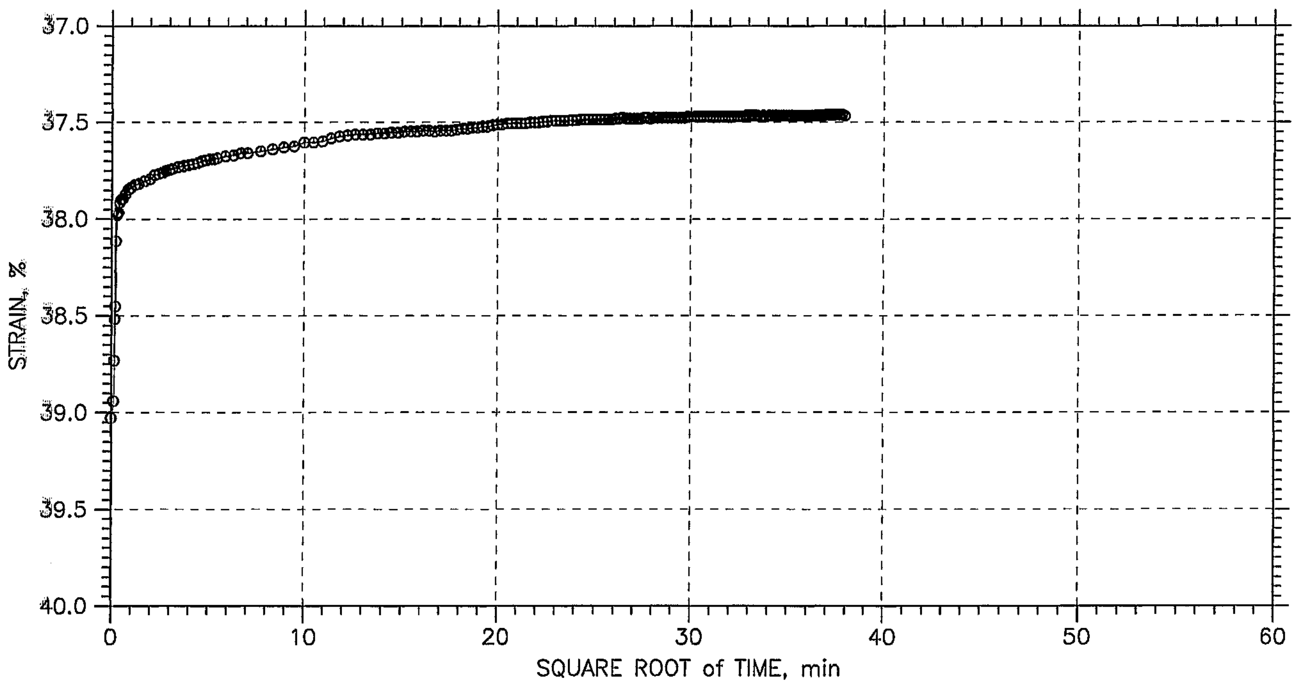
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

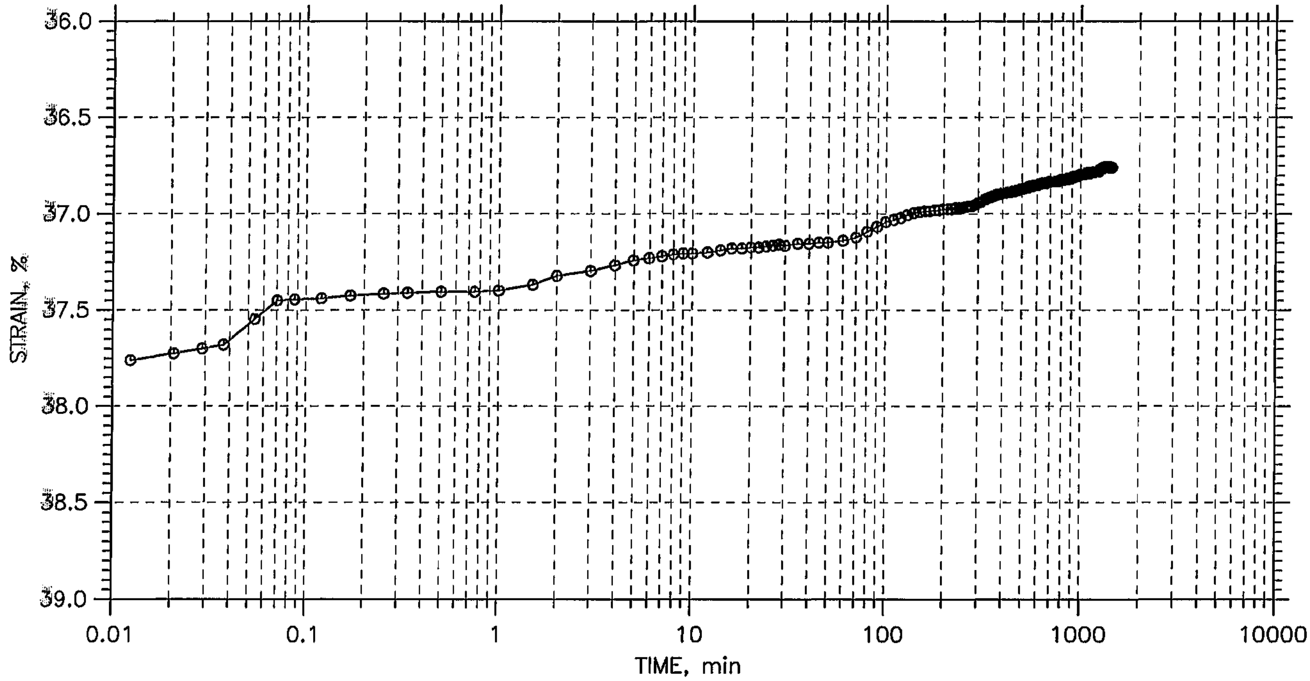
Tue, 04-SEP-2007 15:36:15

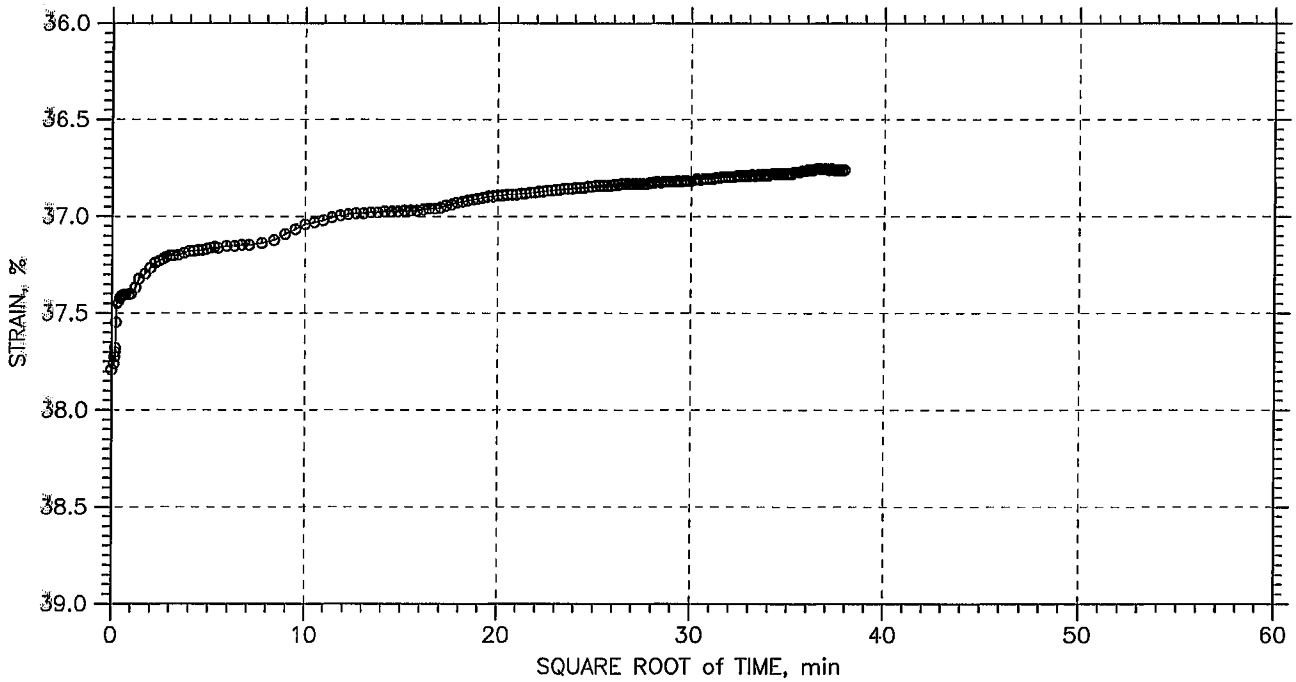
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf

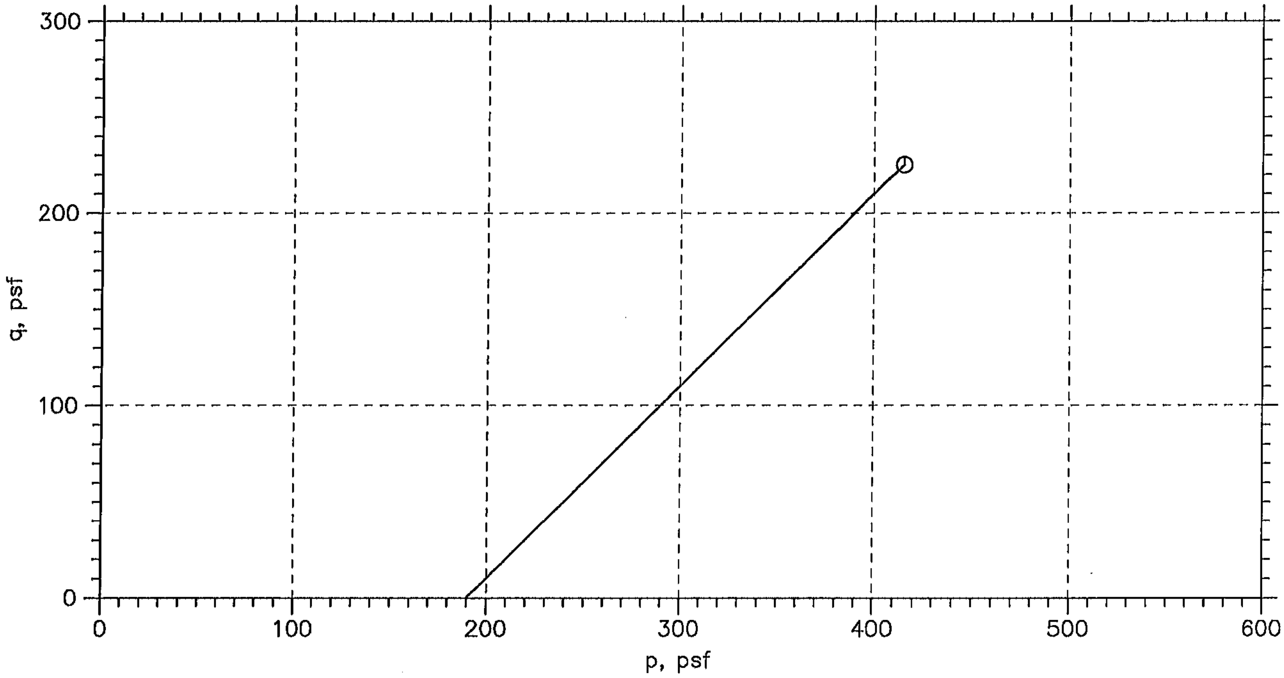


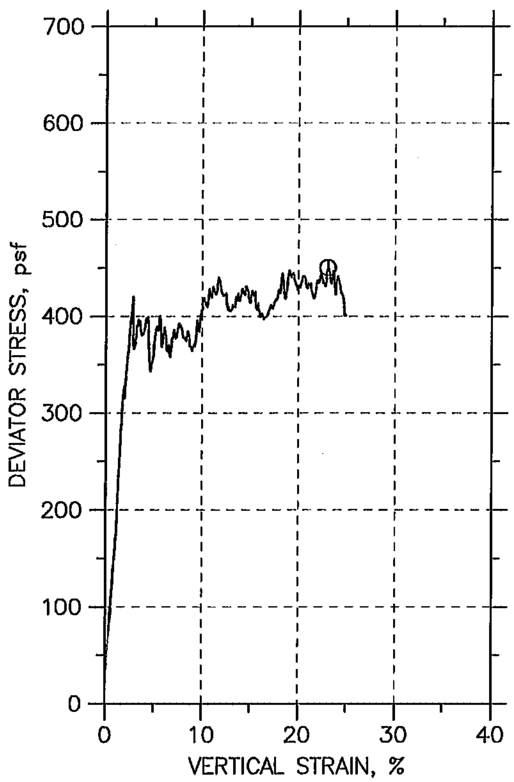


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-17	Test Date: 08/10/2007	Depth: 19-21 ft
	Test No.: C-38A	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt with sand		
	Remarks: System T		

Tue, 04-SEP-2007 15:46:15

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





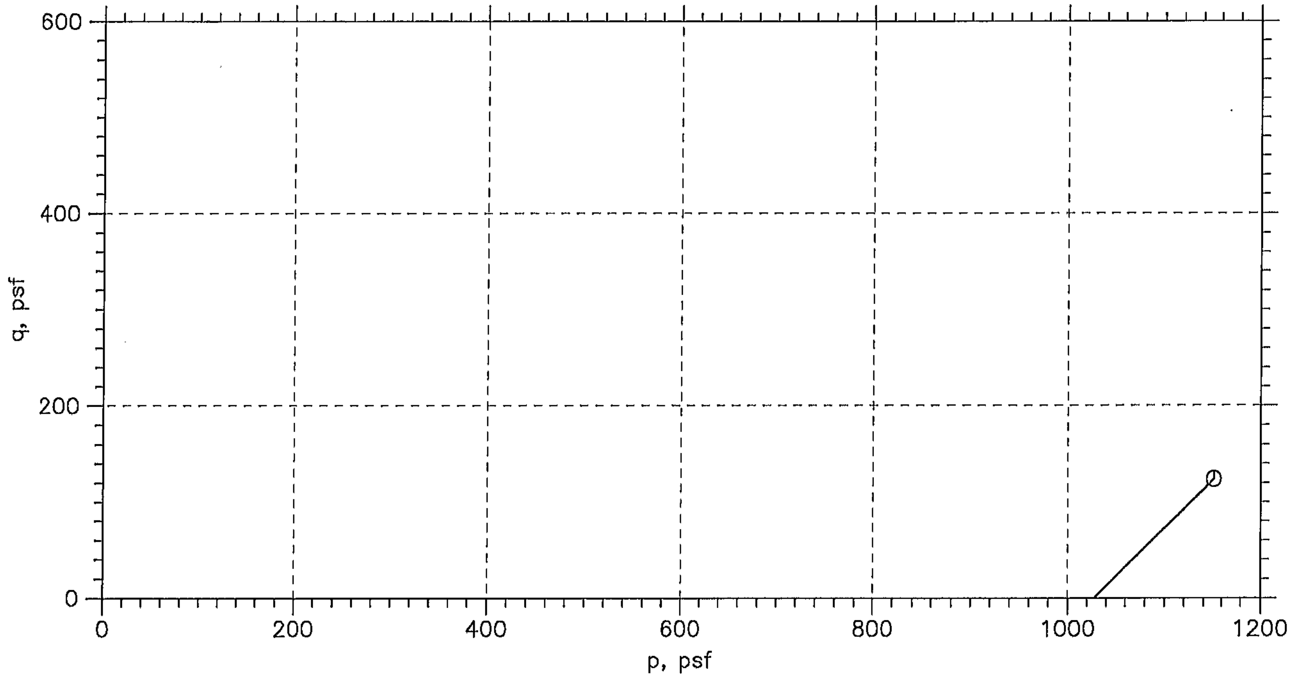
Symbol	O			
Sample No.	0318-06			
Test No.	UU-25			
Depth	4-6 ft			
Tested by	md			
Test Date	08/06/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6			
Water Content, %	211.1			
Dry Density, pcf	23.82			
Saturation, %	93.5			
Void Ratio	6.23			
Confining Stress, psf	190			
Undrained Strength, psf	225.1			
Max. Dev. Stress, psf	450.3			
Strain at Failure, %	23.1			
Strain Rate, %/min	1			
Measured Specific Gravity	2.76			
Liquid Limit	139			
Plastic Limit	88			
Plasticity Index	51			

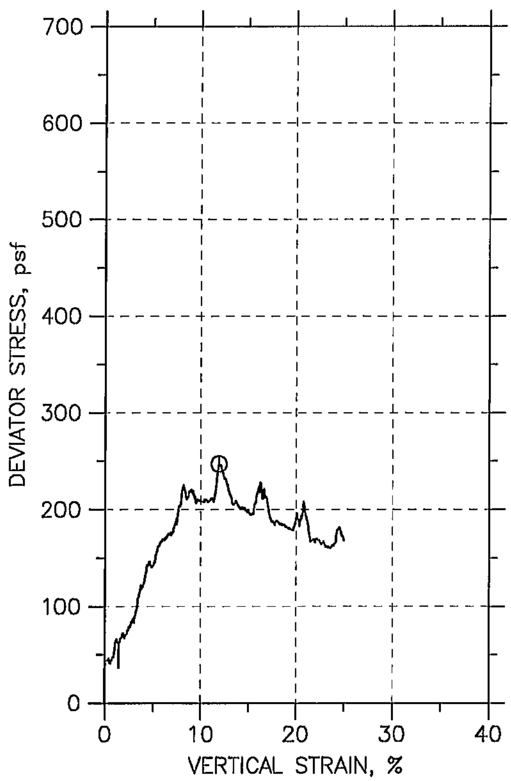
GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	
	Location: Syracuse, NY	
	Project No.: GTX-7143	
	Boring No.: 20052	
	Sample Type: tube	
	Description: Moist, light greenish gray silt	
	Remarks: System A	

Phase calculations based on start and end of test.

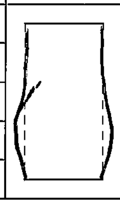
Wed, 22-AUG-2007 14:25:55

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⦶			
Sample No.	0318-15			
Test No.	UU-26			
Depth	26-28 ft			
Tested by	md			
Test Date	08/06/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6			
Water Content, %	32.0			
Dry Density, pcf	86.1			
Saturation, %	87.9			
Void Ratio	1.01			
Confining Stress, psf	1028			
Undrained Strength, psf	123.6			
Max. Dev. Stress, psf	247.1			
Strain at Failure, %	11.9			
Strain Rate, %/min	1			
Measured Specific Gravity	2.77			
Liquid Limit	28			
Plastic Limit	16			
Plasticity Index	12			

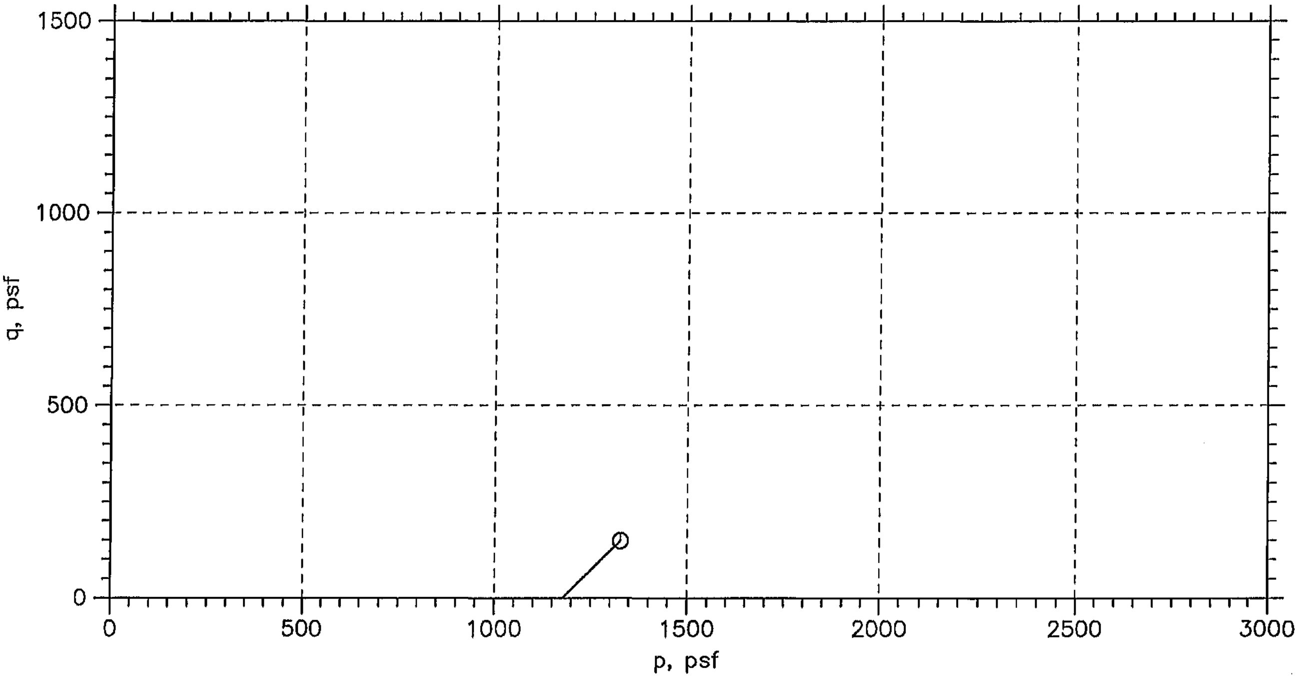


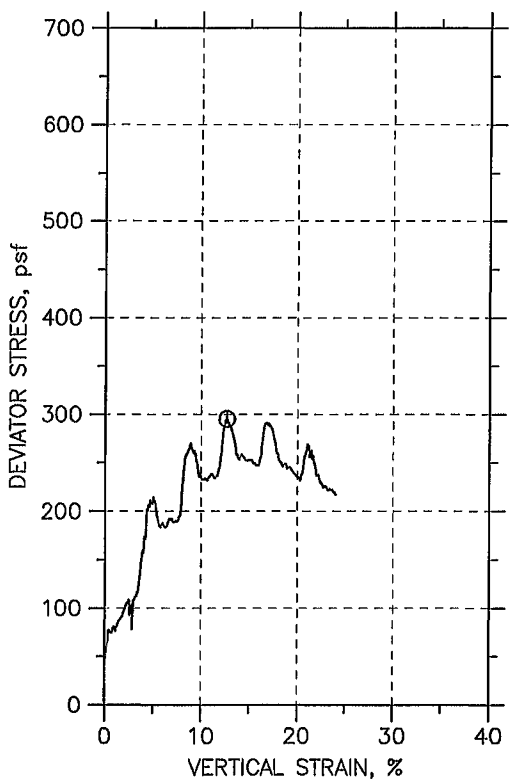
GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga
	Location: Syracuse, NY
	Project No.: GTX-7143
	Boring No.: 20055
	Sample Type: tube
	Description: Moist, dark yellowish brown clay
	Remarks: System A

Phase calculations based on start and end of test.

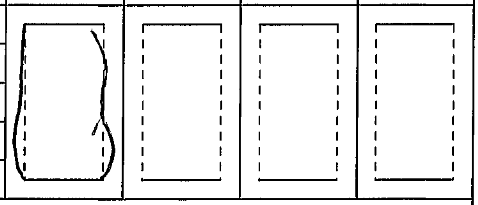
Fri, 24-AUG-2007 11:59:14

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⊕			
Sample No.	0318-10			
Test No.	UU-27			
Depth	30-32 ft			
Tested by	md			
Test Date	08/07/07			
Checked by	jdt			
Check Date				
Diameter, in	2.89			
Height, in	5.9			
Water Content, %	27.8			
Dry Density, pcf	95.6			
Saturation, %	98.3			
Void Ratio	0.763			
Confining Stress, psf	1180			
Undrained Strength, psf	147.7			
Max. Dev. Stress, psf	295.4			
Strain at Failure, %	12.7			
Strain Rate, %/min	1			
Measured Specific Gravity	2.7			
Liquid Limit	24			
Plastic Limit	15			
Plasticity Index	9			



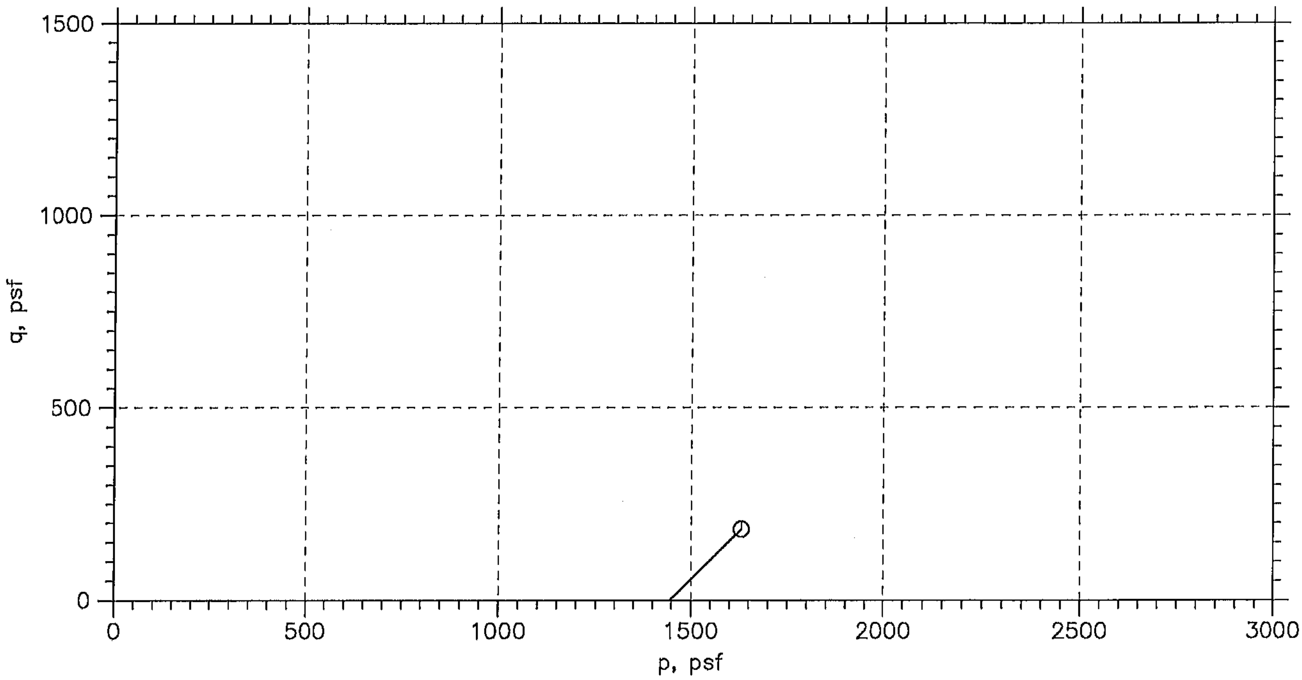
GeoTesting express
a subsidiary of Geocomp Corporation

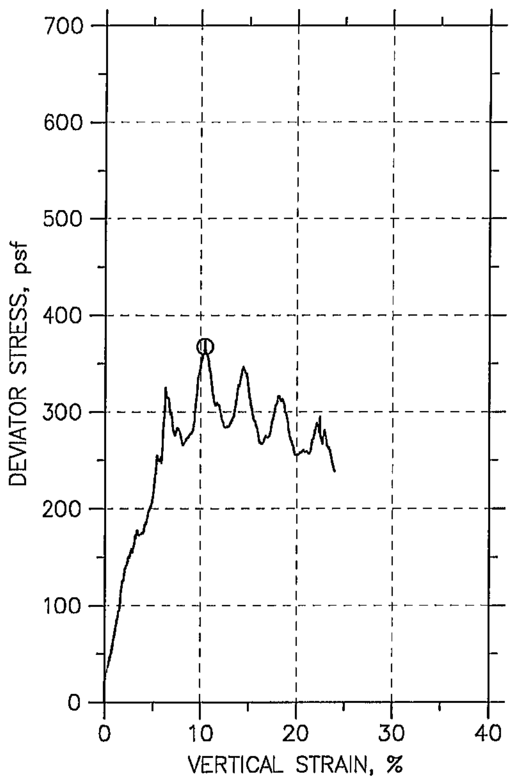
Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20052
Sample Type: tube
Description: Moist, olive brown clay
Remarks: System A

Phase calculations based on start and end of test.

Fri, 24-AUG-2007 12:02:10

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

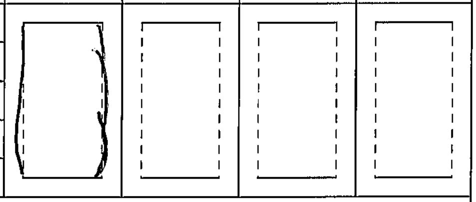




Symbol	⦶			
Sample No.	0317-10			
Test No.	UU-28			
Depth	37-39 ft			
Tested by	md			
Test Date	08/07/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6			
Water Content, %	41.6			
Dry Density, pcf	80.04			
Saturation, %	100.0			
Void Ratio	1.14			
Confining Stress, psf	1447			
Undrained Strength, psf	183.8			
Max. Dev. Stress, psf	367.6			
Strain at Failure, %	10.4			
Strain Rate, %/min	1			
Measured Specific Gravity	2.75			
Liquid Limit	26			
Plastic Limit	16			
Plasticity Index	10			

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20036
Sample Type: tube

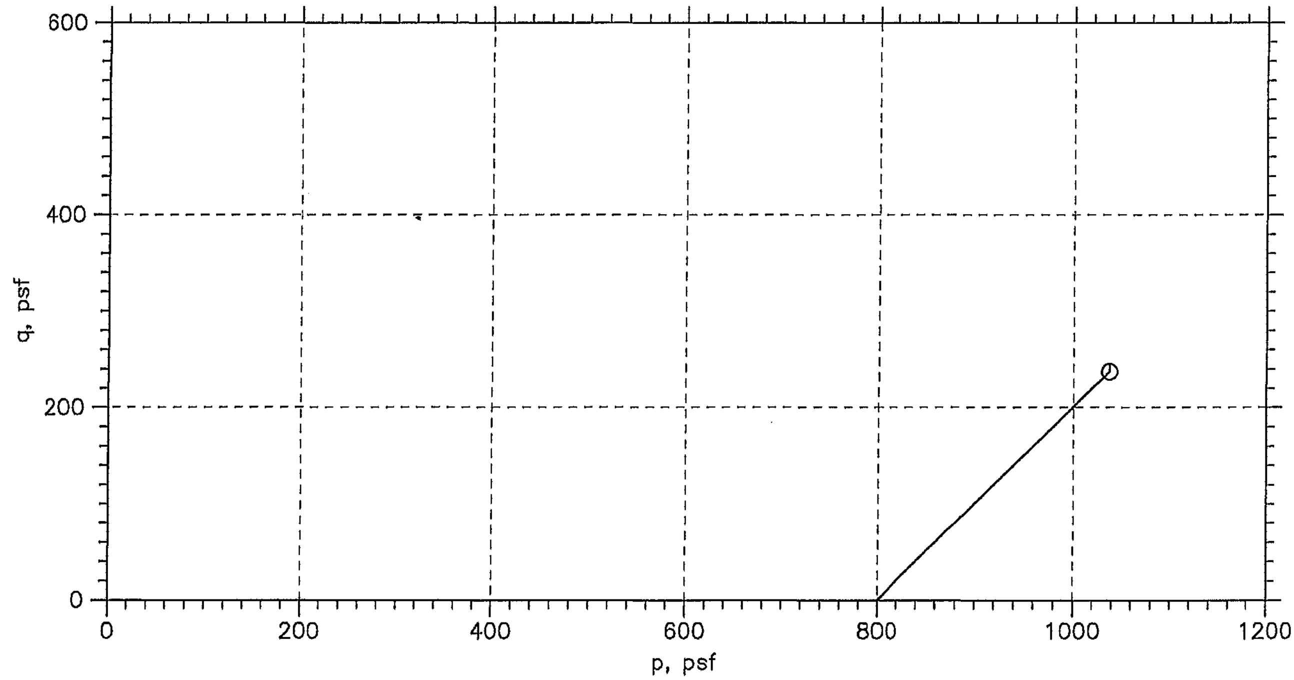


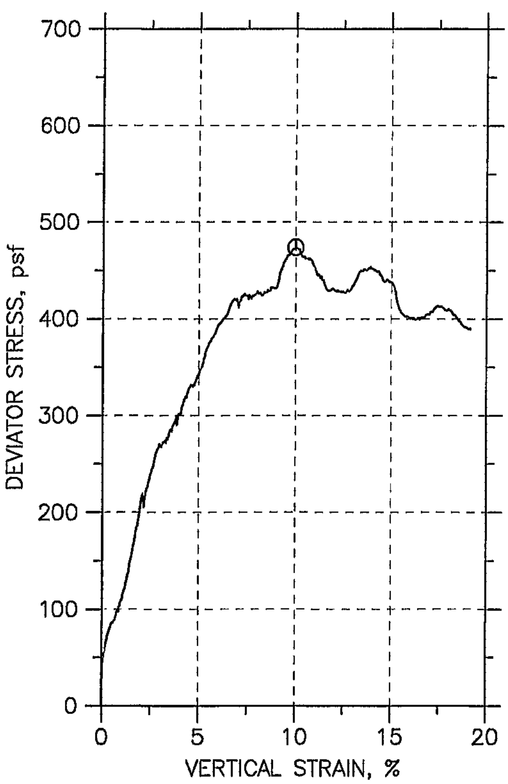
Description: Moist, very dark gray clay
Remarks: System A

Phase calculations based on start and end of test.

Fri, 24-AUG-2007 12:06:16

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

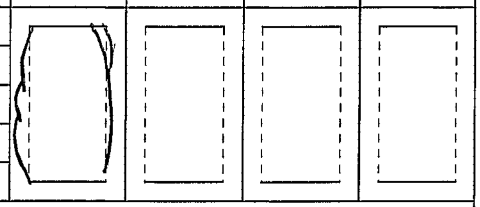




Symbol	⏀			
Sample No.	0318-14			
Test No.	UU-29			
Depth	20-22 ft			
Tested by	md			
Test Date	08/09/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6			
Water Content, %	62.9			
Dry Density, pcf	63.21			
Saturation, %	99.3			
Void Ratio	1.78			
Confining Stress, psf	800			
Undrained Strength, psf	236.9			
Max. Dev. Stress, psf	473.9			
Strain at Failure, %	10			
Strain Rate, %/min	1			
Measured Specific Gravity	2.82			
Liquid Limit	46			
Plastic Limit	24			
Plasticity Index	22			

GeoTesting express a subsidiary of Geocomp Corporation

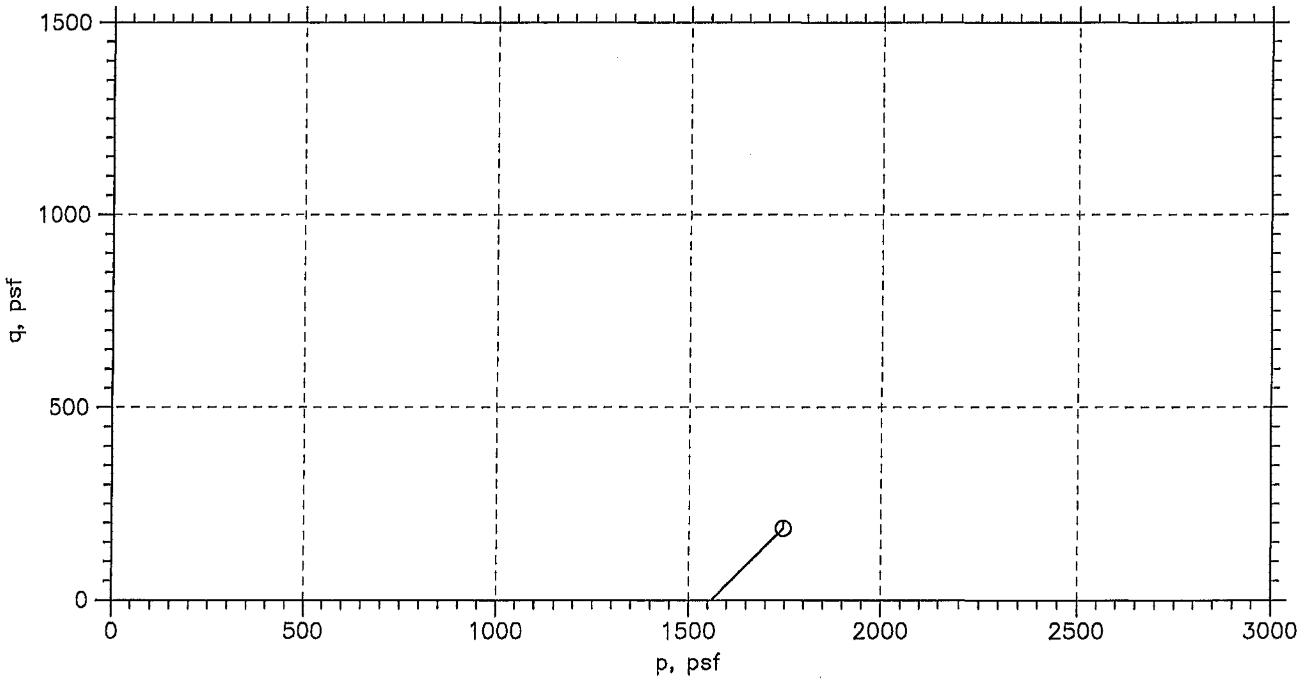
Project: Onondaga	
Location: Syracuse, NY	
Project No.: GTX-7143	
Boring No.: 20054	
Sample Type: tube	
Description: Moist, grayish brown clay	
Remarks: System A	

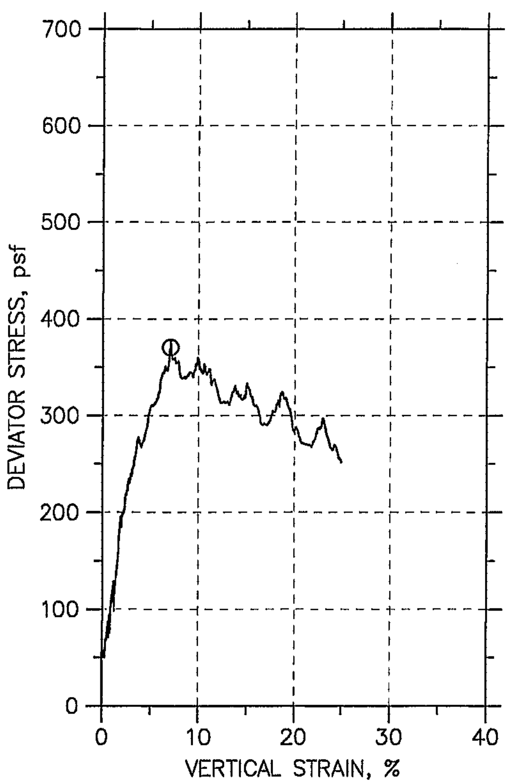


Phase calculations based on start and end of test.

Fri, 24-AUG-2007 12:08:31

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

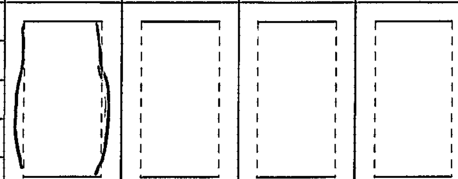




Symbol	①			
Sample No.	0318-05			
Test No.	UU-30			
Depth	40-42 ft			
Tested by	md			
Test Date	08/09/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	5.96			
Water Content, %	32.0			
Dry Density, pcf	84.98			
Saturation, %	85.6			
Void Ratio	1.03			
Confining Stress, psf	1561			
Undrained Strength, psf	185.3			
Max. Dev. Stress, psf	370.5			
Strain at Failure, %	7.07			
Strain Rate, %/min	1			
Measured Specific Gravity	2.77			
Liquid Limit	37			
Plastic Limit	17			
Plasticity Index	20			

GeoTesting express
a subsidiary of Geocomp Corporation

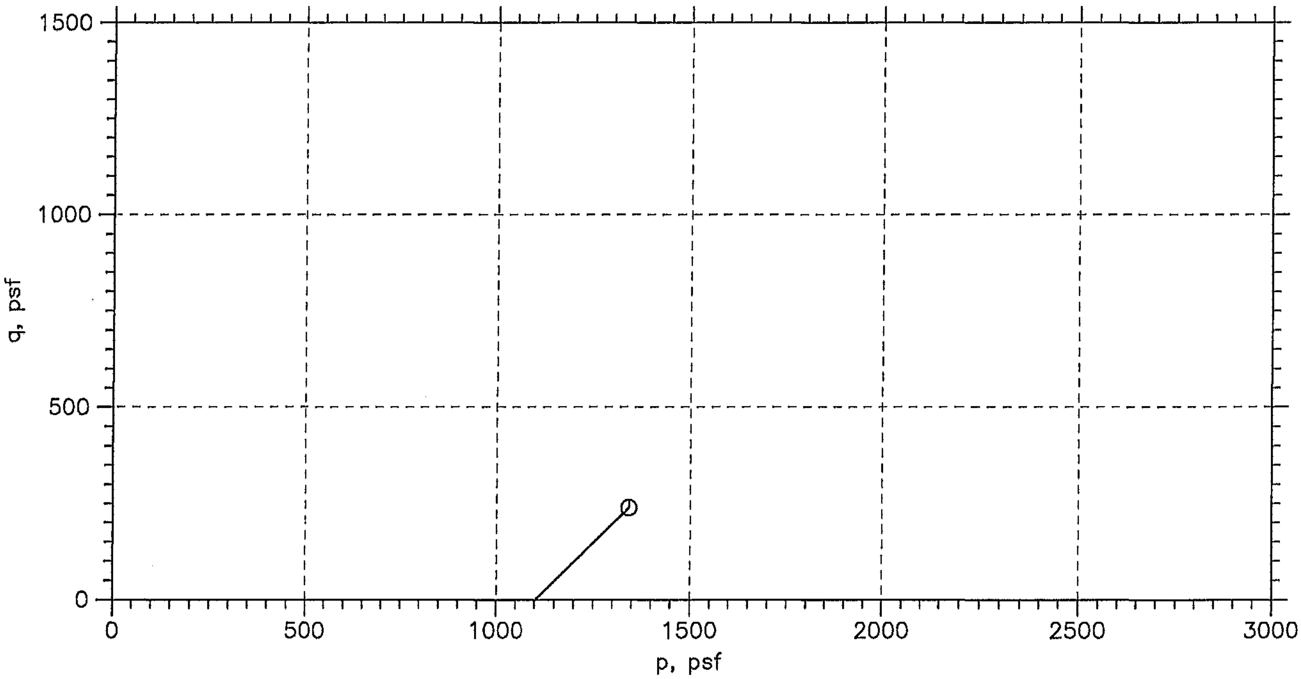
Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20038
Sample Type: tube

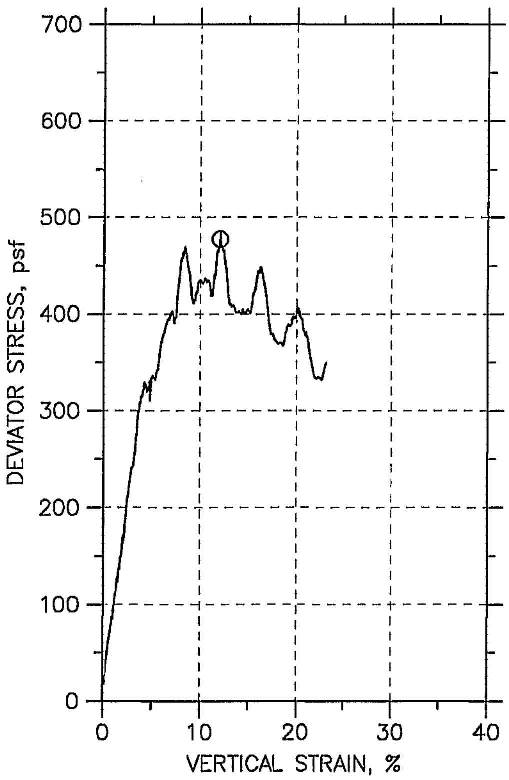


Description: Moist, dark reddish gray clay
Remarks: System A
Phase calculations based on start and end of test.

Fri, 24-AUG-2007 12:11:23

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850

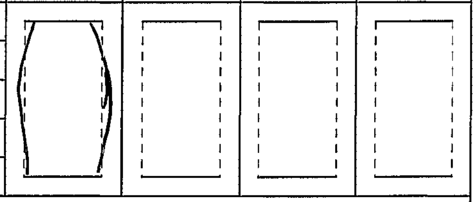




Symbol	⦶			
Sample No.	0318-02			
Test No.	UU-31			
Depth	28-30 ft			
Tested by	md			
Test Date	08/09/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	6.04			
Water Content, %	61.3			
Dry Density, pcf	64.21			
Saturation, %	100.0			
Void Ratio	1.7			
Confining Stress, psf	1104			
Undrained Strength, psf	238.8			
Max. Dev. Stress, psf	477.5			
Strain at Failure, %	12.1			
Strain Rate, %/min	1			
Measured Specific Gravity	2.78			
Liquid Limit	57			
Plastic Limit	26			
Plasticity Index	31			

GeoTesting express
a subsidiary of Geocomp Corporation

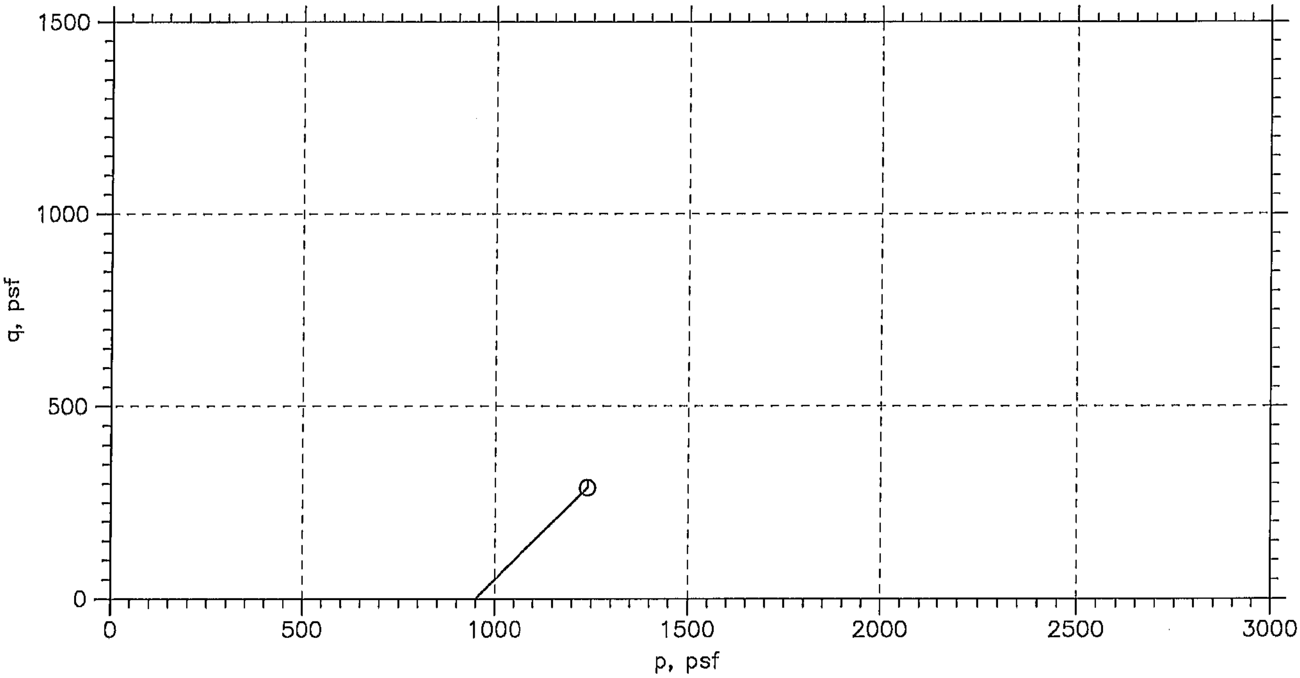
Project: Onondaga	
Location: Syracuse, NY	
Project No.: GTX-7143	
Boring No.: 20038	
Sample Type: tube	
Description: Moist, grayish brown clay	
Remarks: System A	

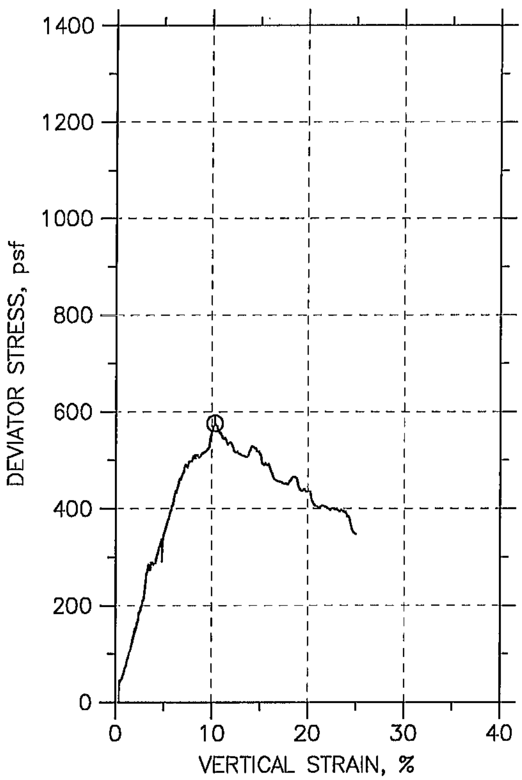


Phase calculations based on start and end of test.

Fri, 24-AUG-2007 12:39:32

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⦶			
Sample No.	0318-09			
Test No.	UU-32			
Depth	24-26 ft			
Tested by	md			
Test Date	08/09/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	5.9			
Water Content, %	53.5			
Dry Density, pcf	65.59			
Saturation, %	92.5			
Void Ratio	1.55			
Confining Stress, psf	952			
Undrained Strength, psf	288.1			
Max. Dev. Stress, psf	576.2			
Strain at Failure, %	10.3			
Strain Rate, %/min	1			
Measured Specific Gravity	2.68			
Liquid Limit	57			
Plastic Limit	33			
Plasticity Index	24			

GeoTesting express
a subsidiary of Geocomp Corporation

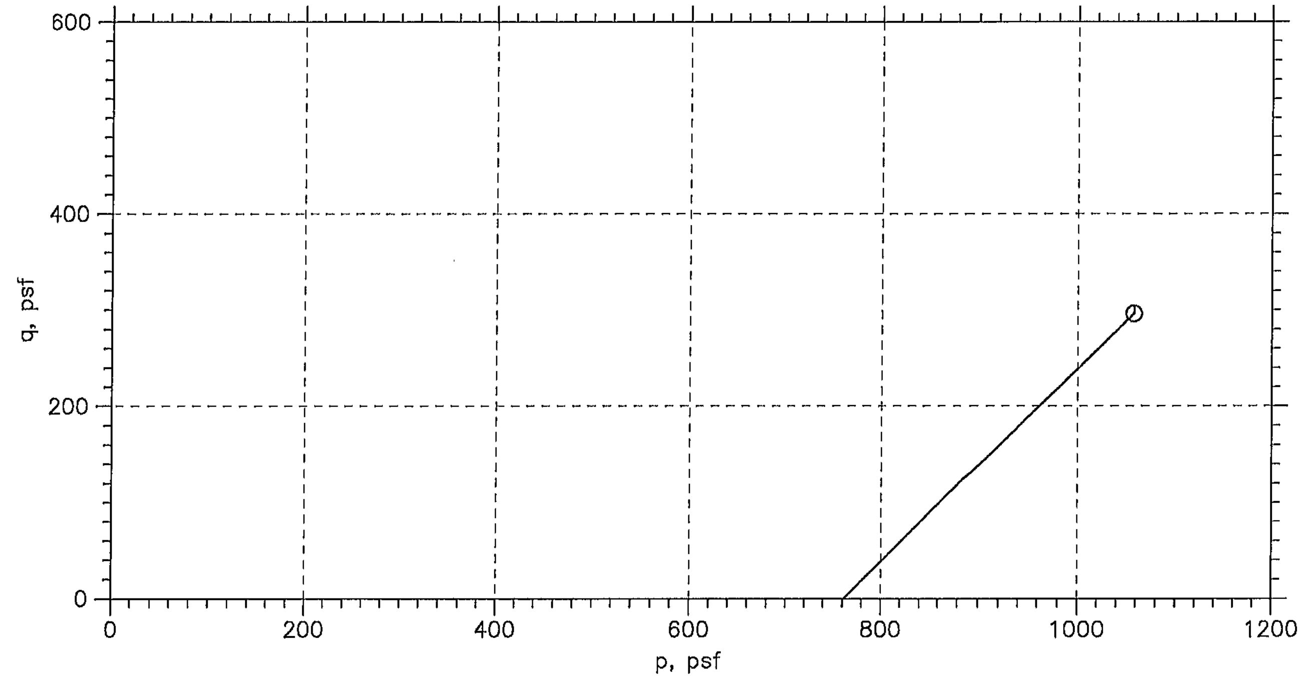
Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20052
Sample Type: tube

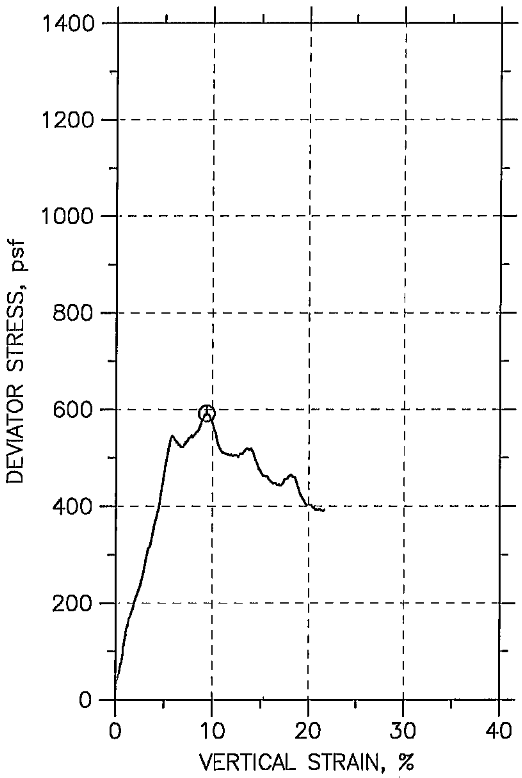
Description: Moist, dark greenish gray silt
Remarks: System A

Phase calculations based on start and end of test.

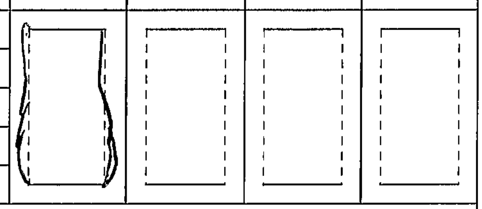
Fri, 24-AUG-2007 12:43:19

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D2850





Symbol	⦶			
Sample No.	0317-17			
Test No.	UU-33			
Depth	19-21 ft			
Tested by	md			
Test Date	08/09/07			
Checked by	jdt			
Check Date				
Diameter, in	2.87			
Height, in	5.8			
Water Content, %	72.1			
Dry Density, pcf	55.21			
Saturation, %	96.5			
Void Ratio	1.95			
Confining Stress, psf	762			
Undrained Strength, psf	295.9			
Max. Dev. Stress, psf	591.9			
Strain at Failure, %	9.4			
Strain Rate, %/min	1			
Measured Specific Gravity	2.61			
Liquid Limit	71			
Plastic Limit	39			
Plasticity Index	32			



GeoTesting express
a subsidiary of Geocomp Corporation

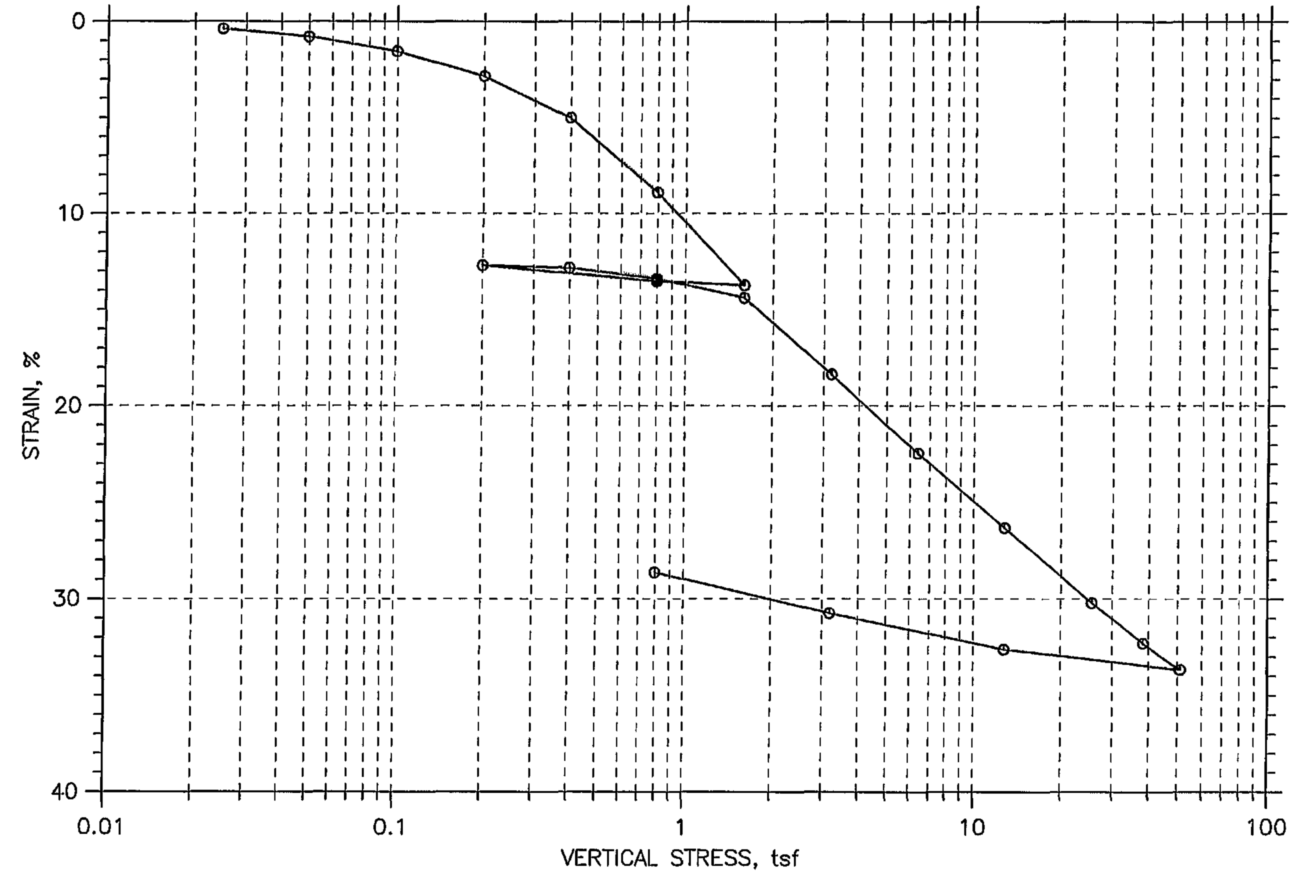
Project: Onondaga	
Location: Syracuse, NY	
Project No.: GTX-7143	
Boring No.: 20036	
Sample Type: tube	
Description: Moist, dark greenish gray silt with sand	
Remarks: System A	

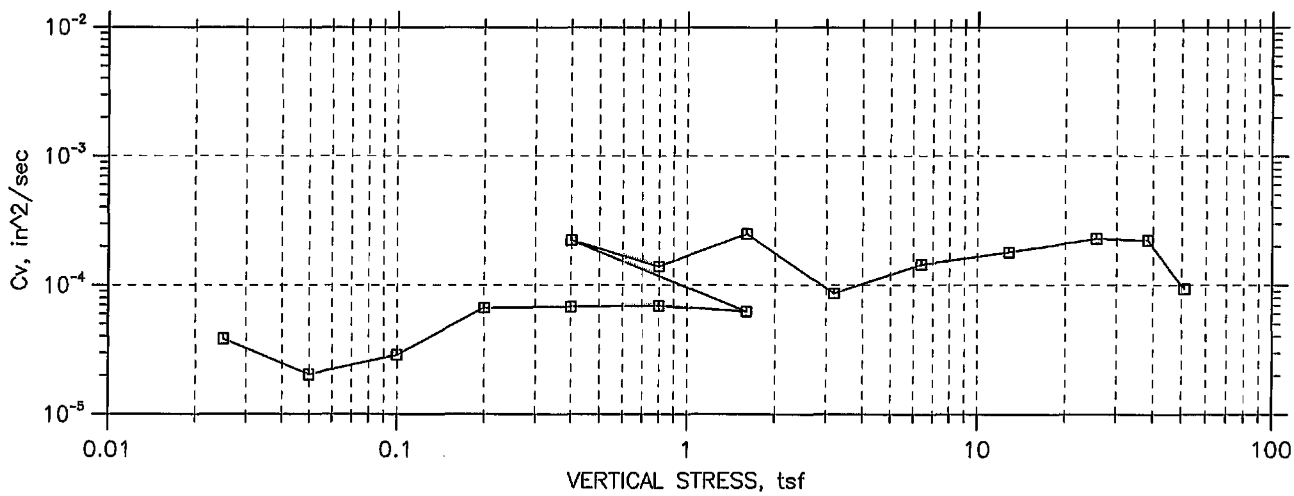
Phase calculations based on start and end of test.

Fri, 24-AUG-2007 12:45:48

CONSOLIDATION TEST DATA

SUMMARY REPORT



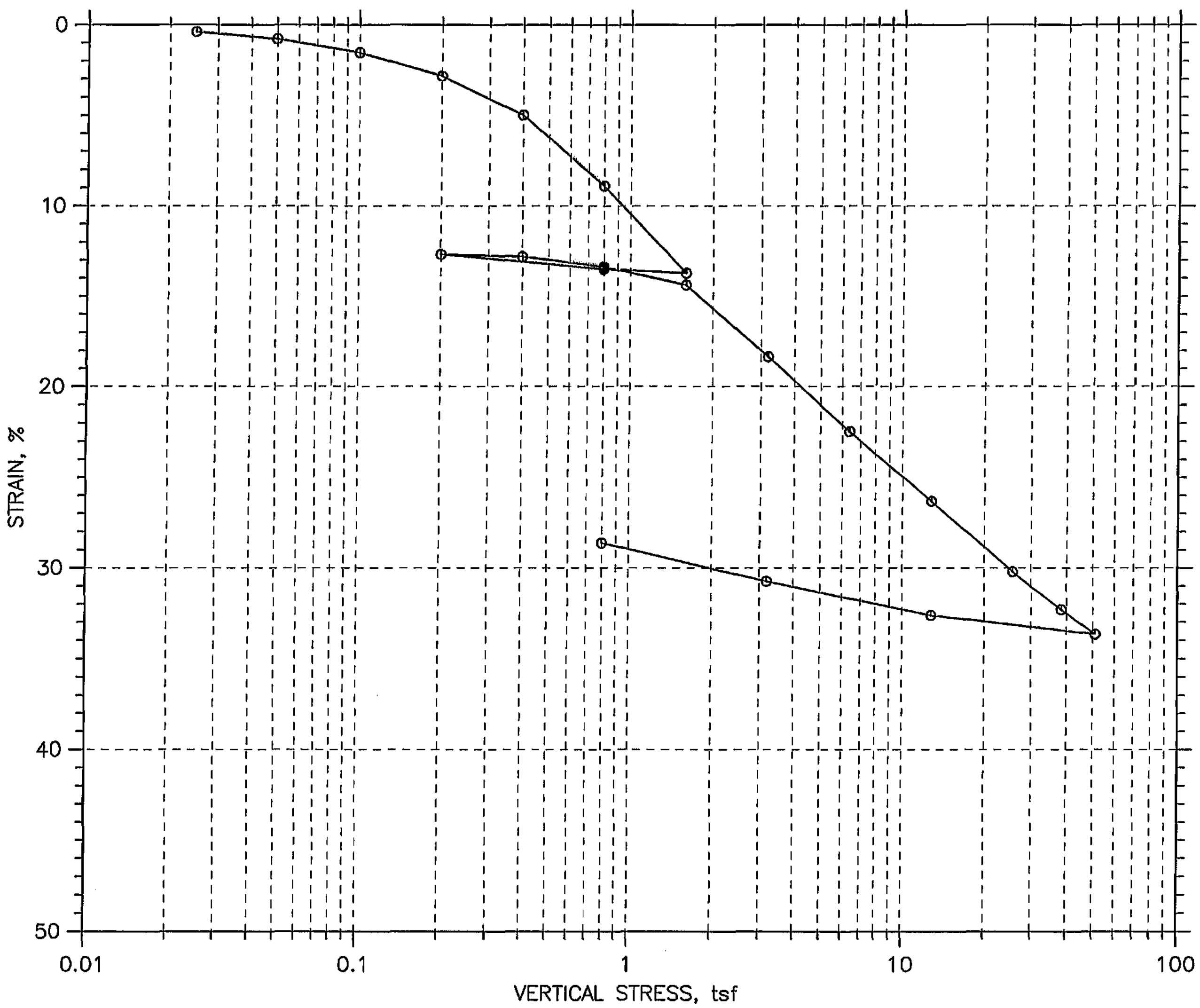


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

Mon, 27-AUG-2007 12:23:15

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	38.92	17.73
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	82.78	116.
Compression Index: ---				Saturation, %	99.00	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	1.09	0.49
LL: 37	PL: 17	PI: 20	GS: 2.77			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

Mon, 27-AUG-2007 12:23:17

CONSOLIDATION TEST DATA

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 20038	Tested By: md	Checked By: jdt
Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
Test No.: C-40	Sample Type: tube	Elevation: ---

Soil Description: Moist, dark reddish gray clay
Remarks: System R

Measured Specific Gravity: 2.77	Liquid Limit: 37	Initial Height: 1.00 in
Initial Void Ratio: 1.09	Plastic Limit: 17	Specimen Diameter: 2.50 in
Final Void Ratio: 0.49	Plasticity Index: 20	

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	Woman	RING		dirt
Wt. Container + Wet Soil, gm	207.63	257.42	234.82	123.29
Wt. Container + Dry Soil, gm	165.48	215.91	215.91	105.97
Wt. Container, gm	8.14	109.24	109.24	8.28
Wt. Dry Soil, gm	157.34	106.67	106.67	97.69
Water Content, %	26.79	38.92	17.73	17.73
Void Ratio	---	1.09	0.49	---
Degree of Saturation, %	---	99.00	100.00	---
Dry Unit Weight, pcf	---	82.783	115.97	---

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20038
Sample No.: 0318-05
Test No.: C-40

Location: Syracuse, NY
Tested By: md
Test Date: 07/30/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 40-42 ft
Elevation: ---

Soil Description: Moist, dark reddish gray clay
Remarks: System R

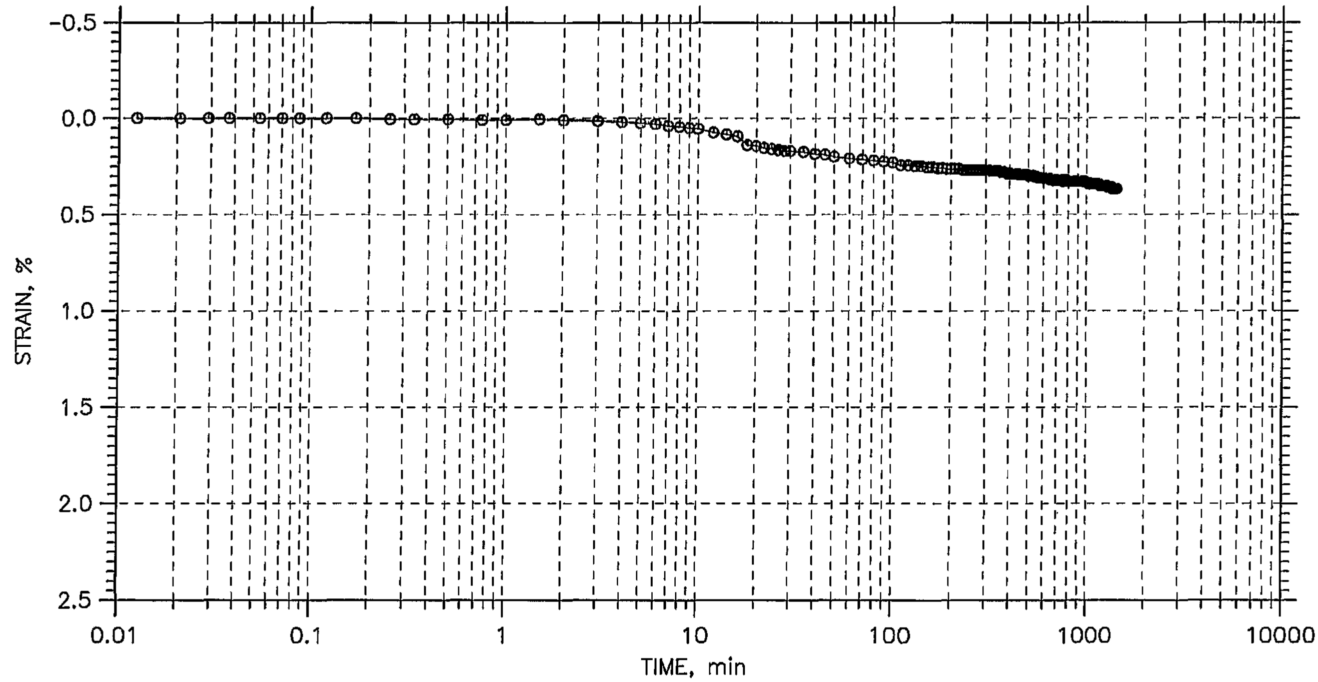
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.025	0.003668	1.081	0.37	21.3	0.0	3.84e-005	0.00e+000	3.84e-005
2	0.05	0.007663	1.073	0.77	40.0	0.0	2.03e-005	0.00e+000	2.03e-005
3	0.1	0.01529	1.057	1.53	27.8	0.0	2.89e-005	0.00e+000	2.89e-005
4	0.2	0.02831	1.030	2.83	11.7	0.0	6.70e-005	0.00e+000	6.70e-005
5	0.4	0.04992	0.985	4.99	9.8	12.5	7.75e-005	6.05e-005	6.80e-005
6	0.8	0.0889	0.903	8.89	10.3	0.0	6.91e-005	0.00e+000	6.91e-005
7	1.6	0.1372	0.802	13.72	8.2	12.4	7.85e-005	5.20e-005	6.26e-005
8	0.8	0.1351	0.807	13.51	0.5	0.0	1.15e-003	0.00e+000	1.15e-003
9	0.2	0.1268	0.824	12.68	2.8	0.0	2.18e-004	0.00e+000	2.18e-004
10	0.4	0.1282	0.821	12.82	2.8	0.0	2.23e-004	0.00e+000	2.23e-004
11	0.8	0.1338	0.809	13.38	4.5	0.0	1.39e-004	0.00e+000	1.39e-004
12	1.6	0.1438	0.789	14.38	2.4	0.0	2.50e-004	0.00e+000	2.50e-004
13	3.2	0.1834	0.706	18.34	5.5	7.8	1.04e-004	7.37e-005	8.64e-005
14	6.4	0.2245	0.620	22.45	3.6	0.0	1.45e-004	0.00e+000	1.45e-004
15	12.8	0.2631	0.539	26.31	2.6	0.0	1.80e-004	0.00e+000	1.80e-004
16	25.6	0.3021	0.458	30.21	1.8	0.0	2.30e-004	0.00e+000	2.30e-004
17	38.4	0.323	0.414	32.30	1.7	0.0	2.23e-004	0.00e+000	2.23e-004
18	51.2	0.3366	0.386	33.66	3.9	0.0	9.37e-005	0.00e+000	9.37e-005
19	12.8	0.3262	0.408	32.62	0.1	0.0	2.60e-003	0.00e+000	2.60e-003
20	3.2	0.3074	0.447	30.74	2.4	0.0	1.62e-004	0.00e+000	1.62e-004
21	0.8	0.2862	0.491	28.62	7.2	0.0	5.62e-005	0.00e+000	5.62e-005

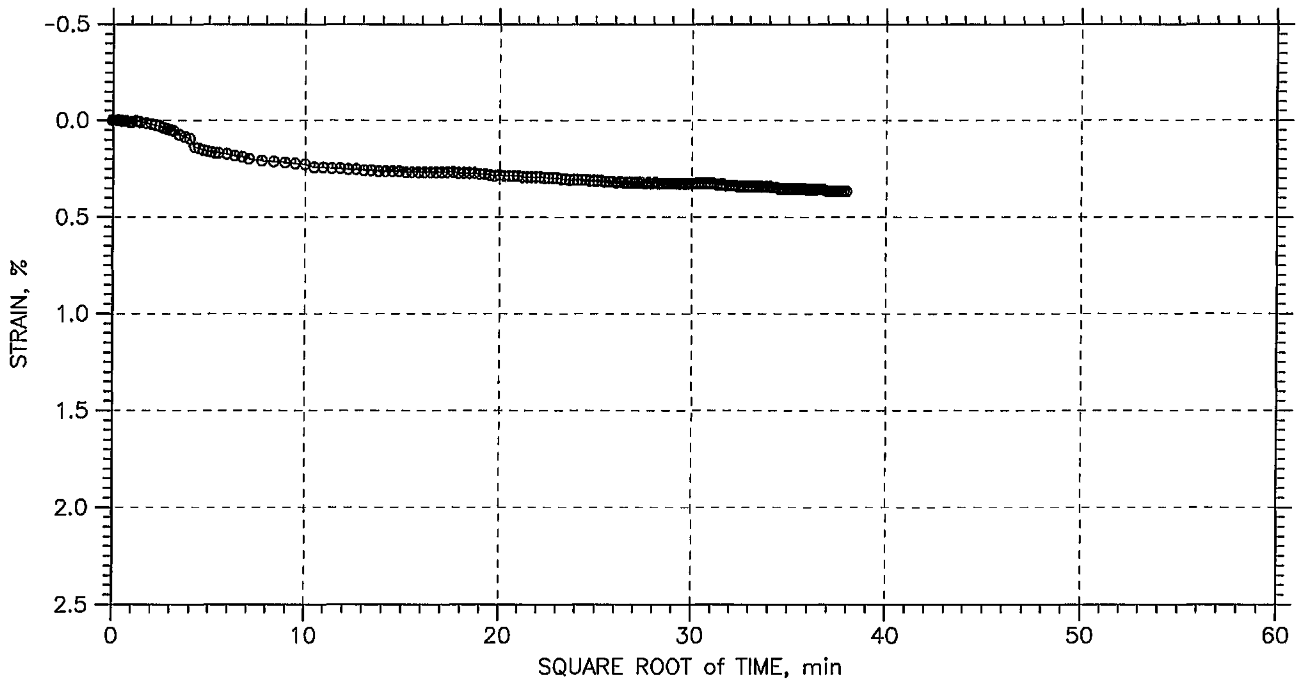
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

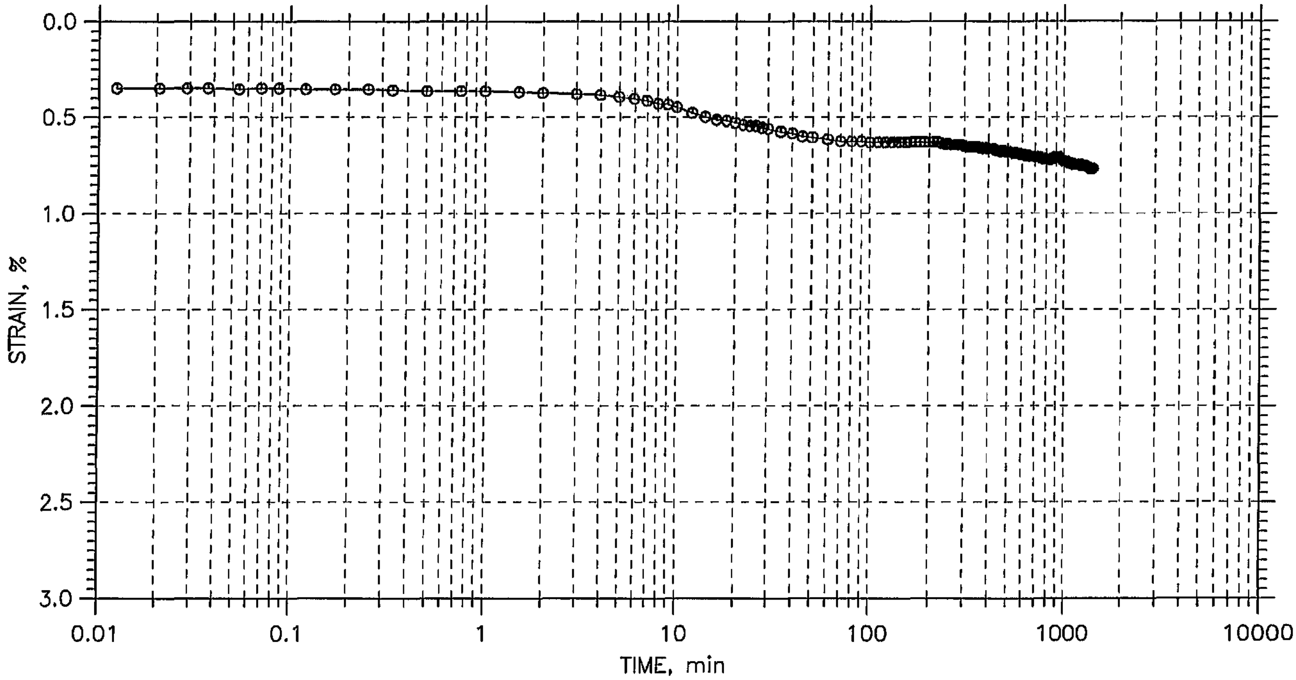
Mon, 27-AUG-2007 12:23:58

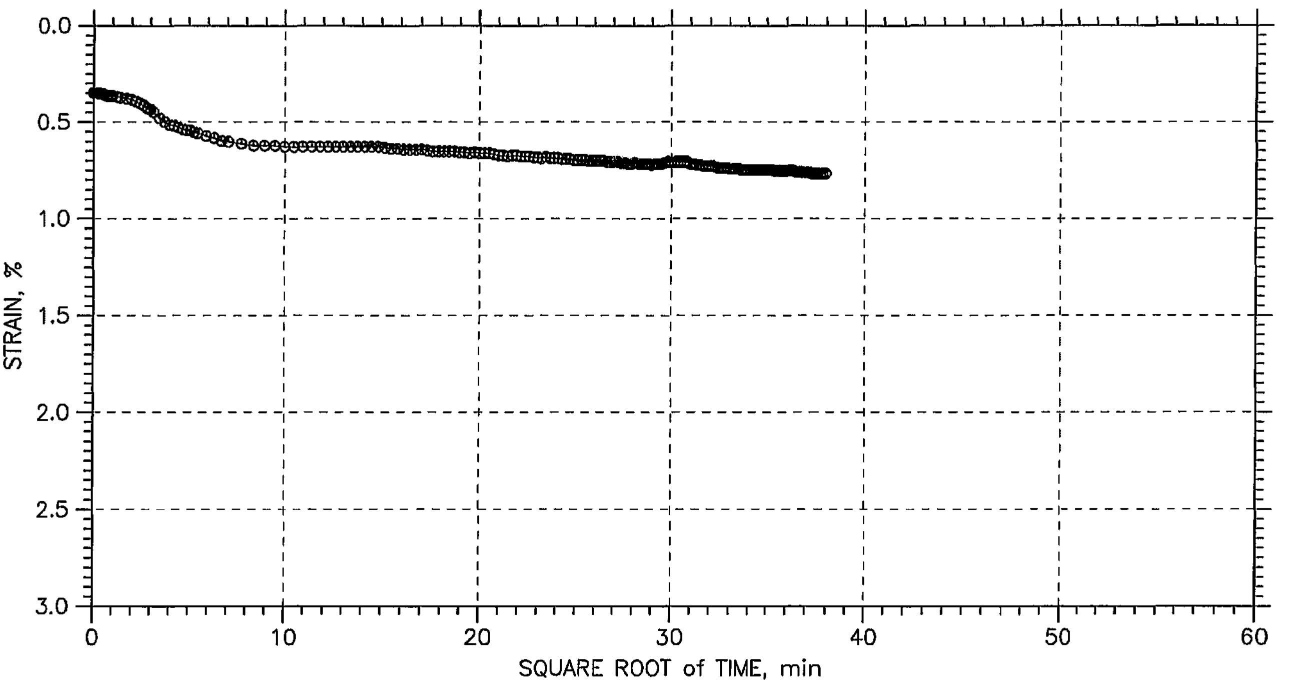
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

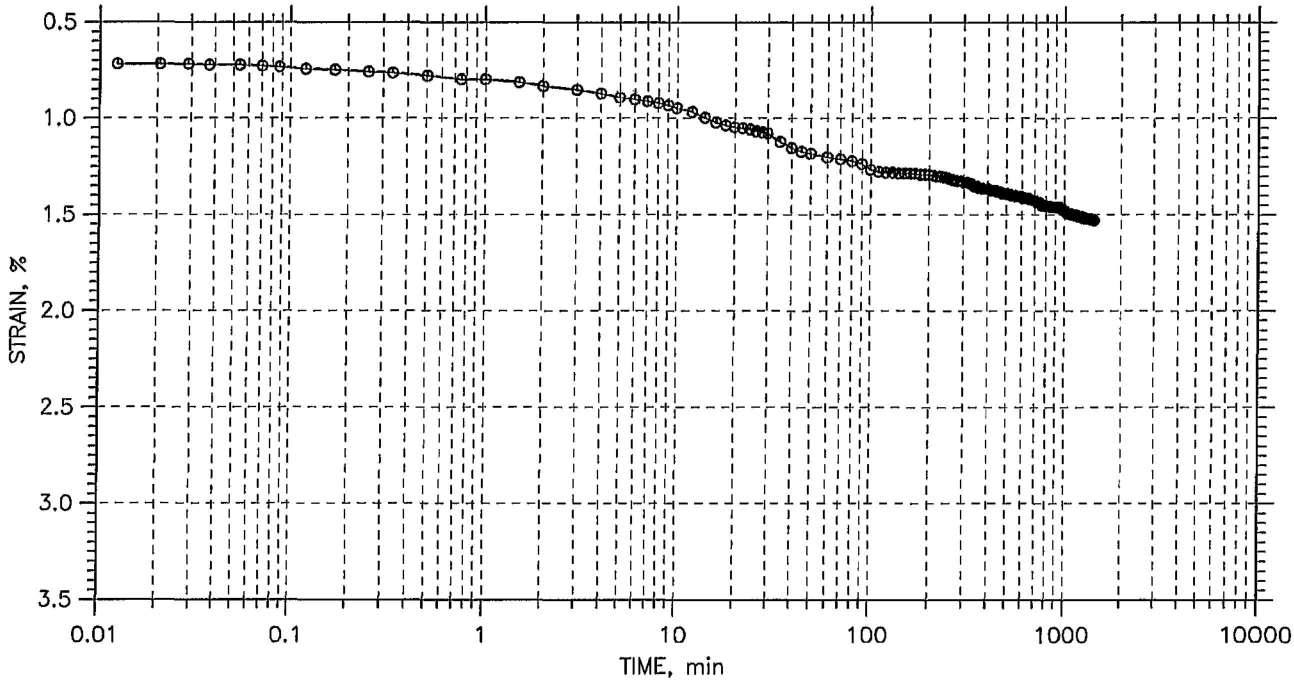
Mon, 27-AUG-2007 12:24:17

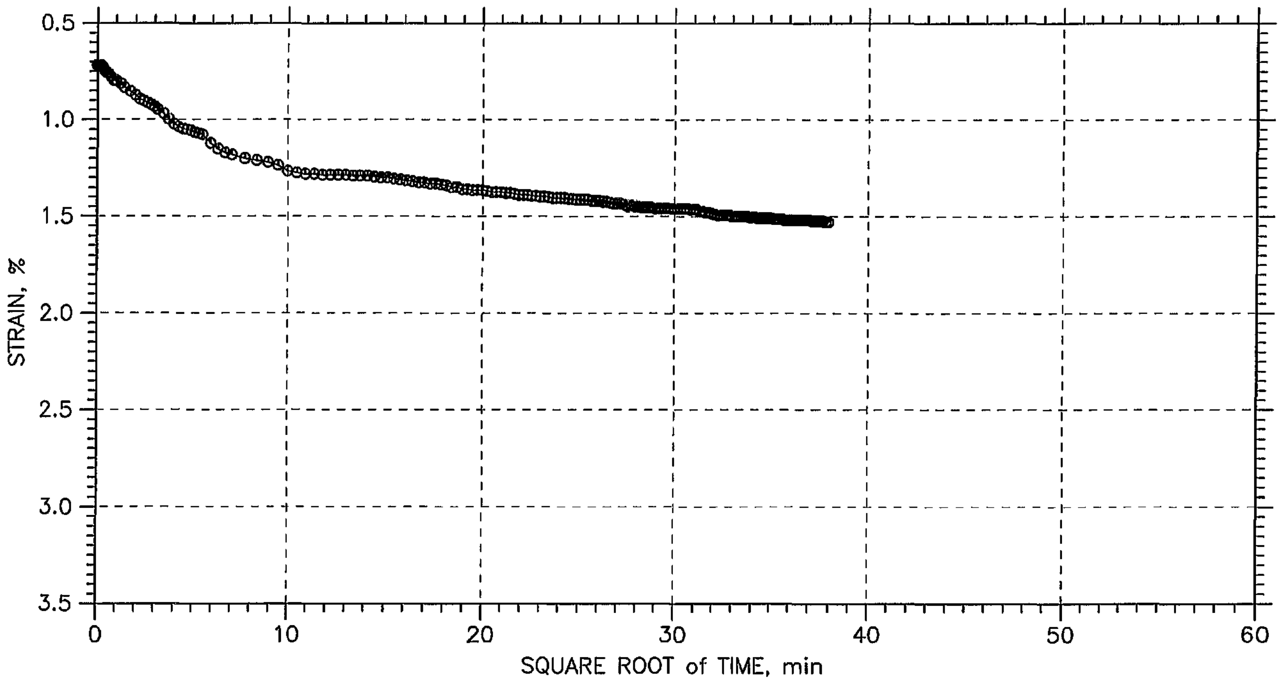
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

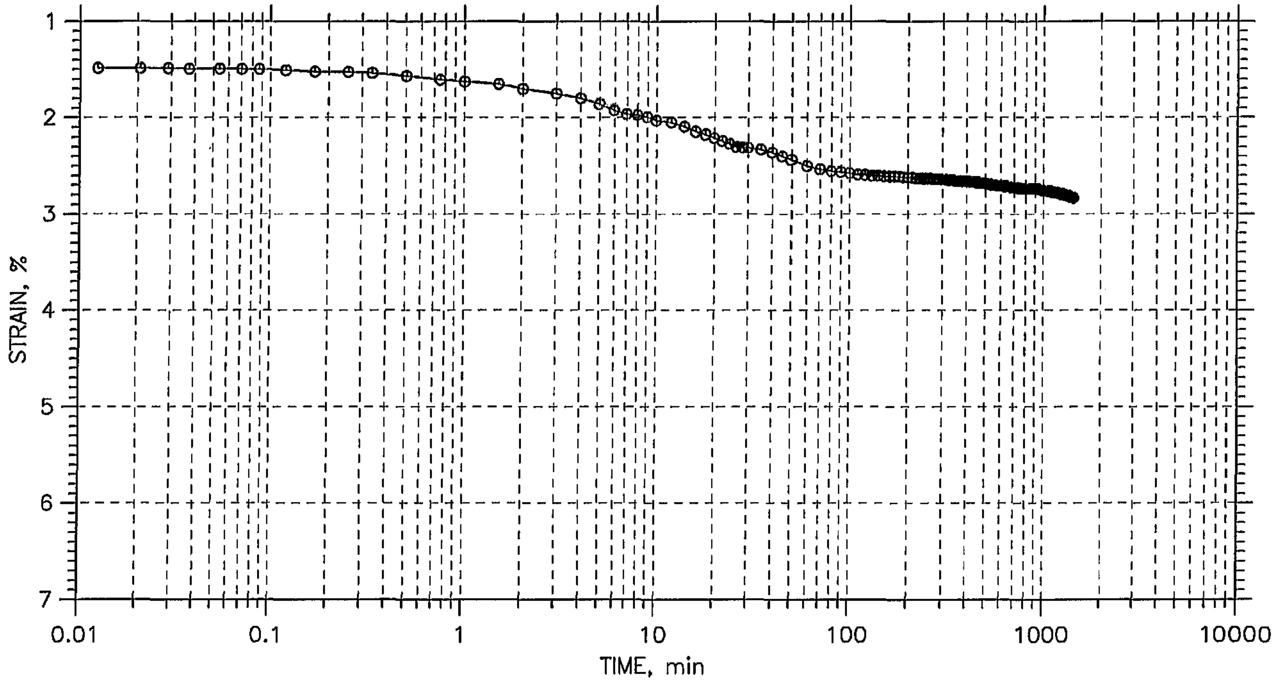
Mon, 27-AUG-2007 12:24:30

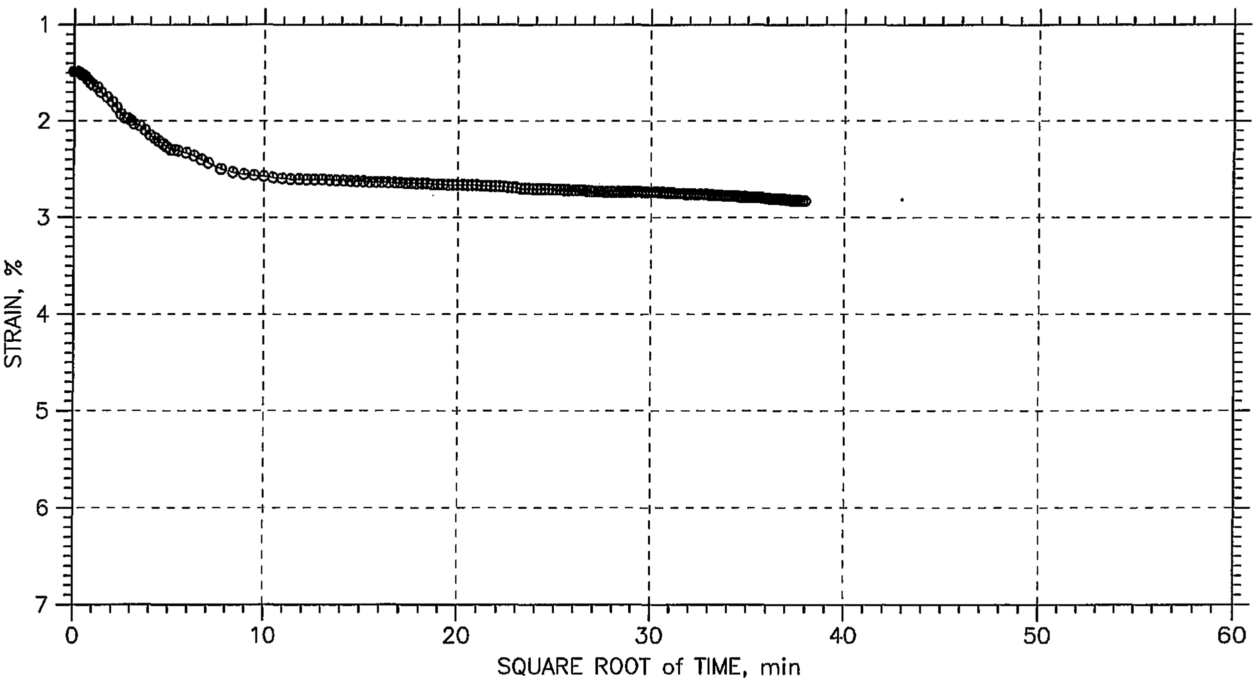
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express — a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

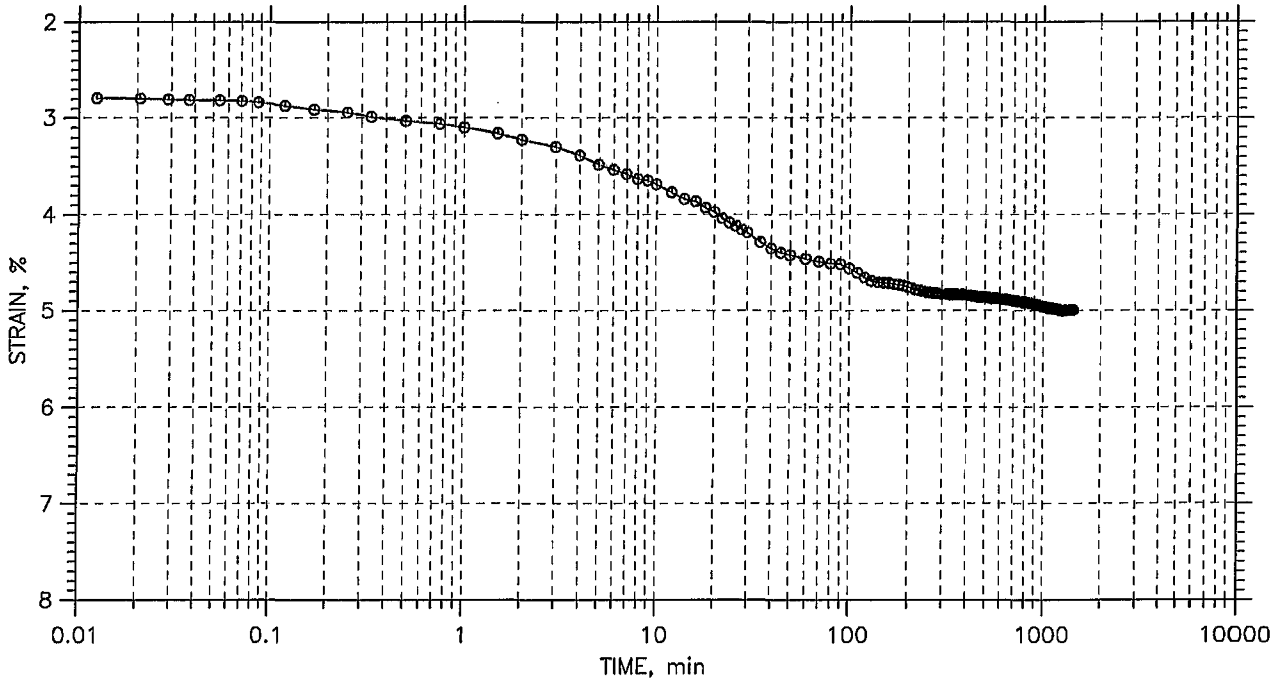
Mon, 27-AUG-2007 12:24:45

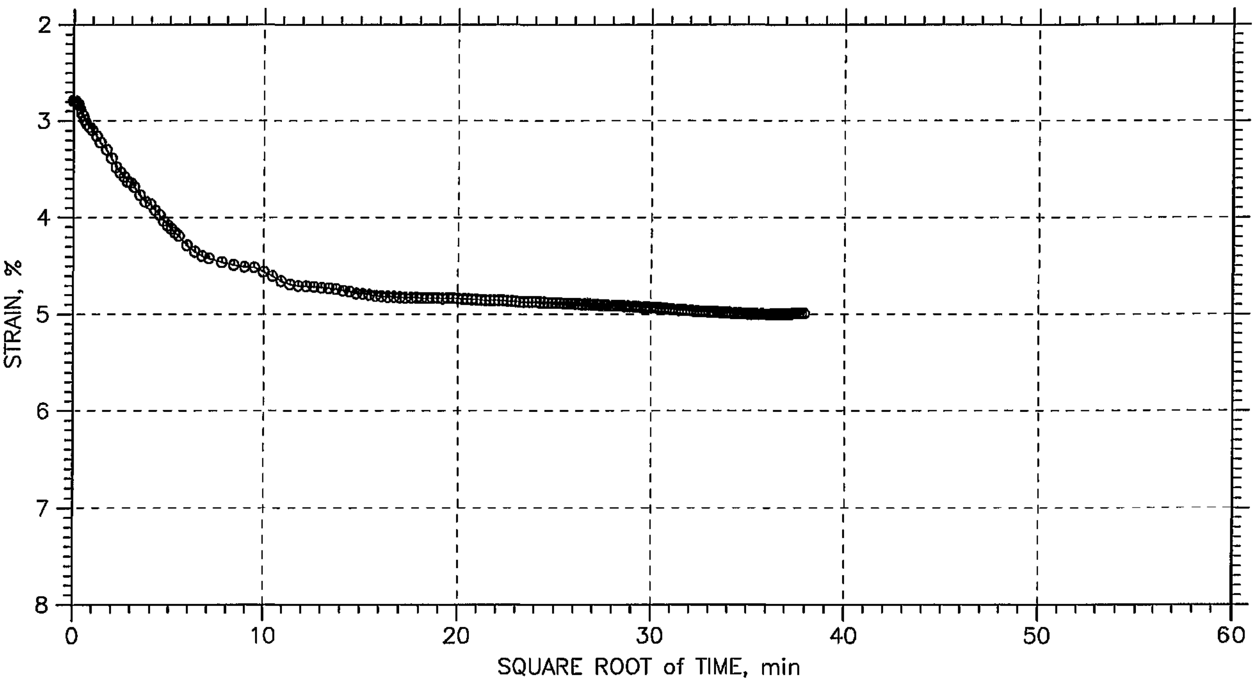
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

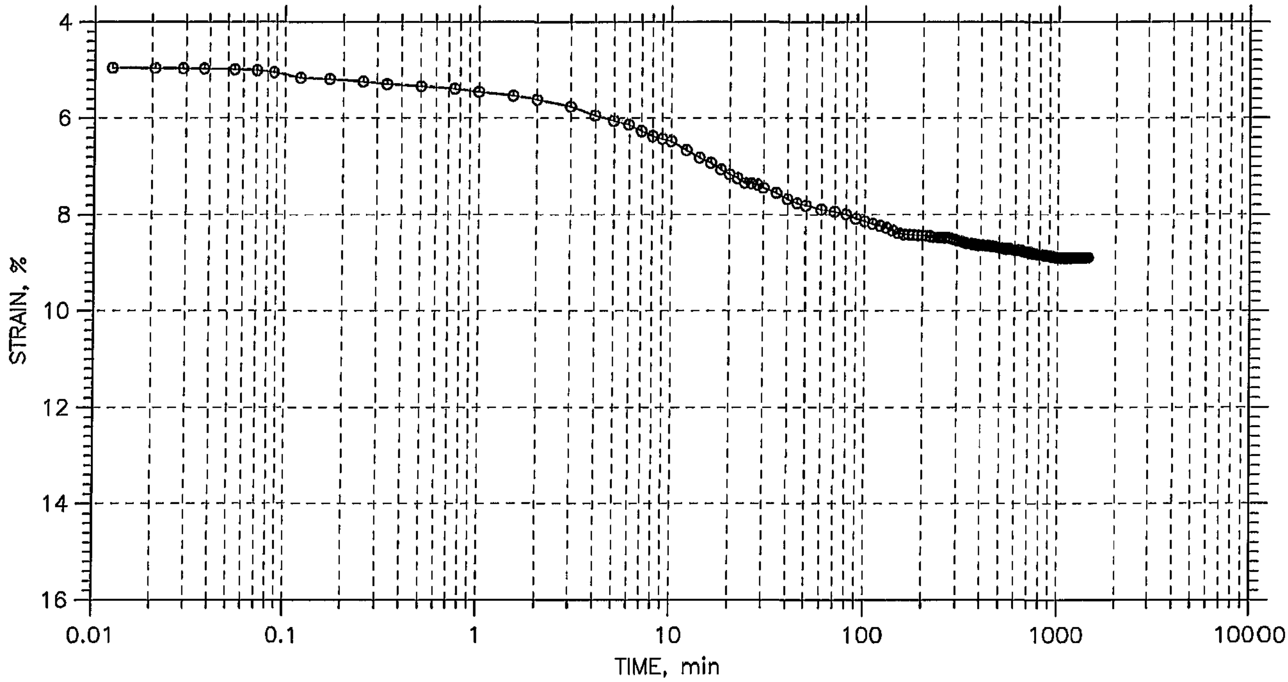
Mon, 27-AUG-2007 12:25:00

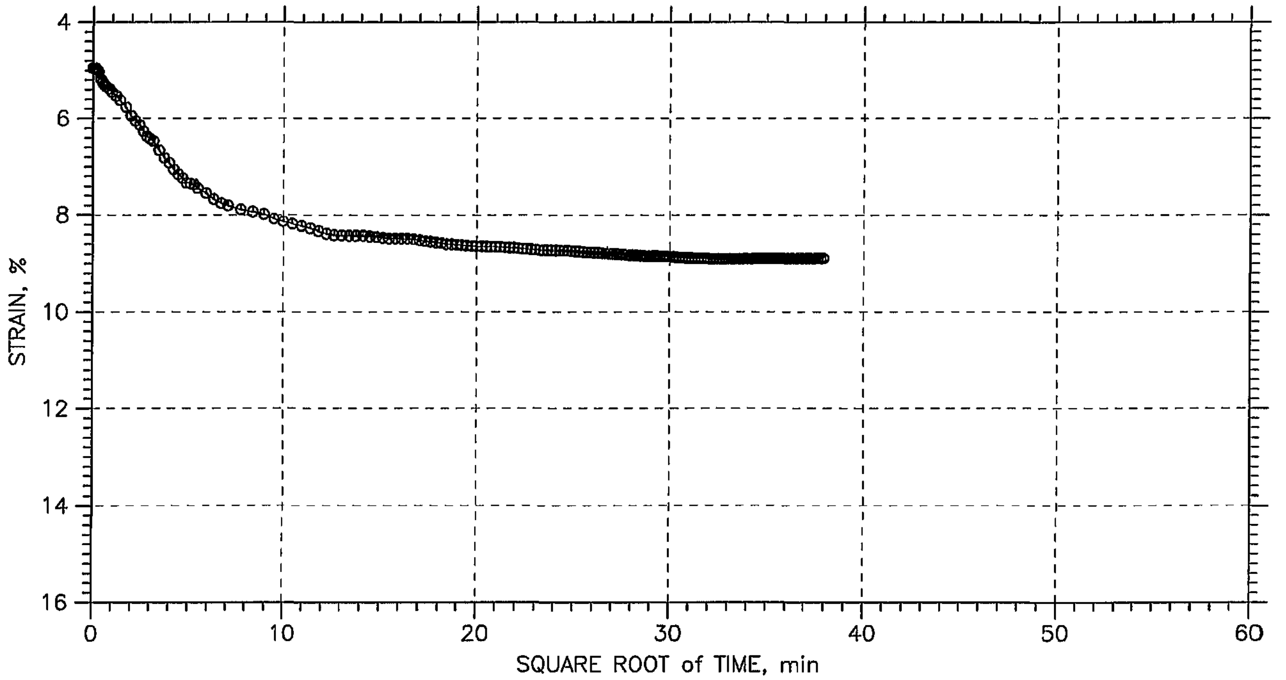
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

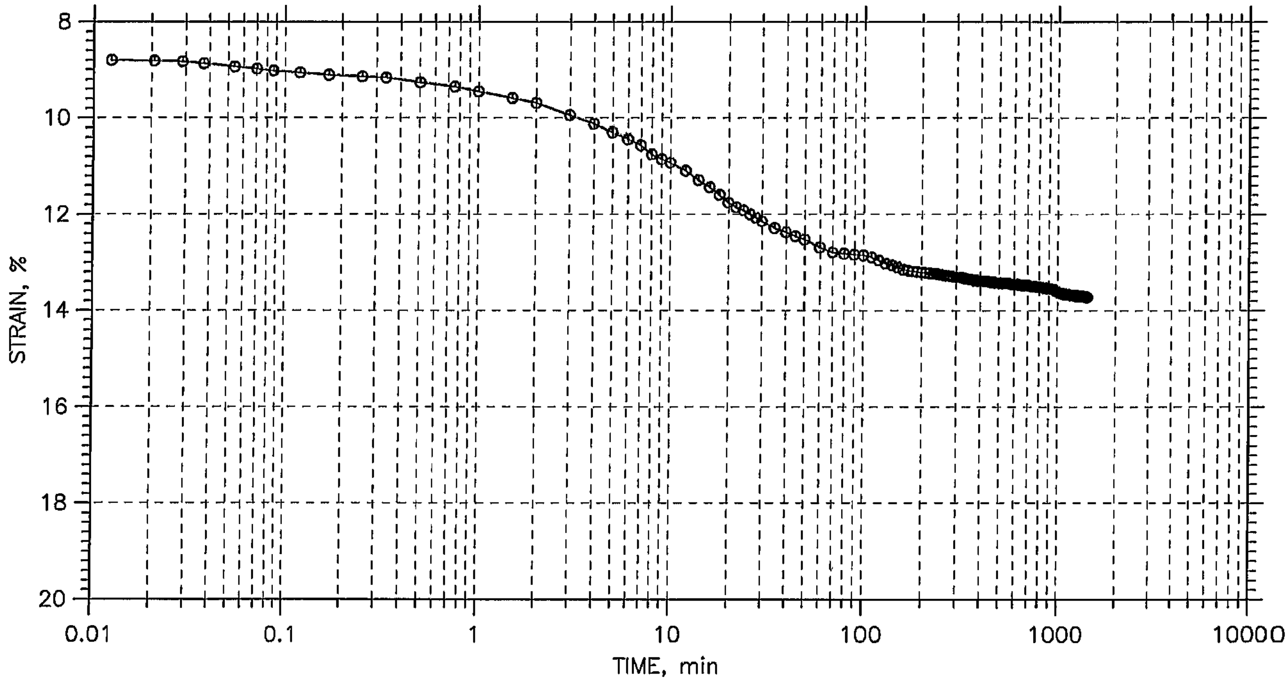
Mon, 27-AUG-2007 12:25:17

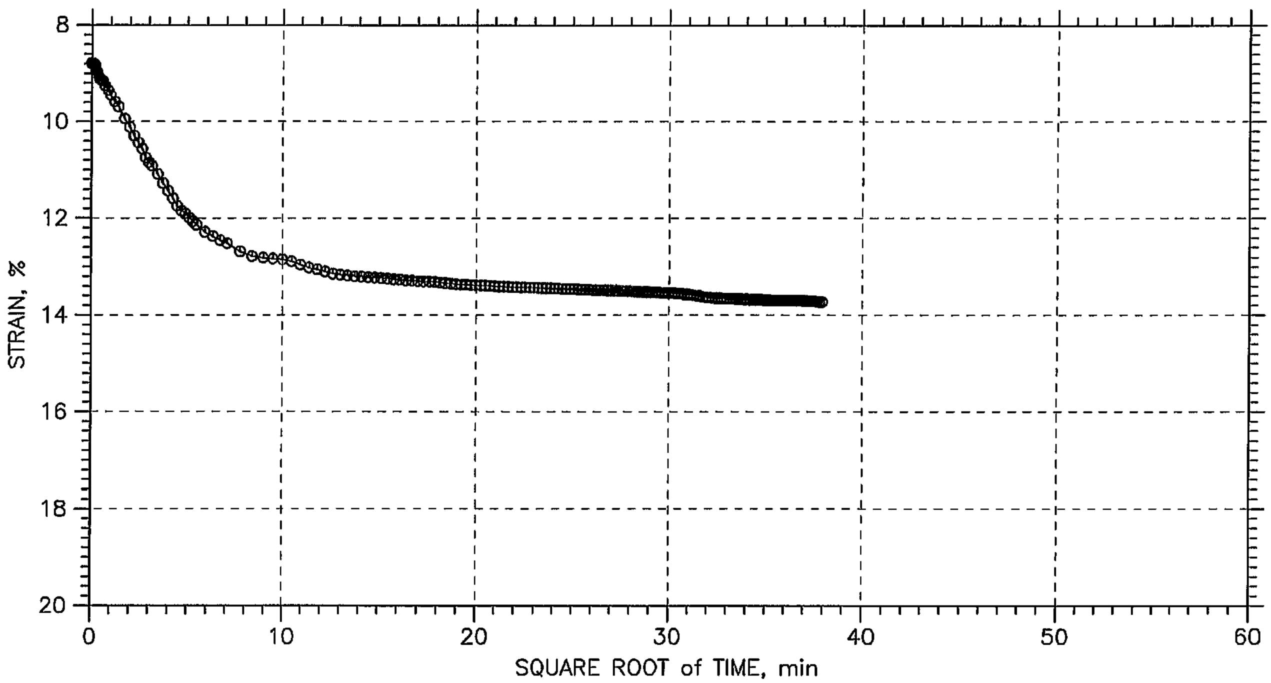
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

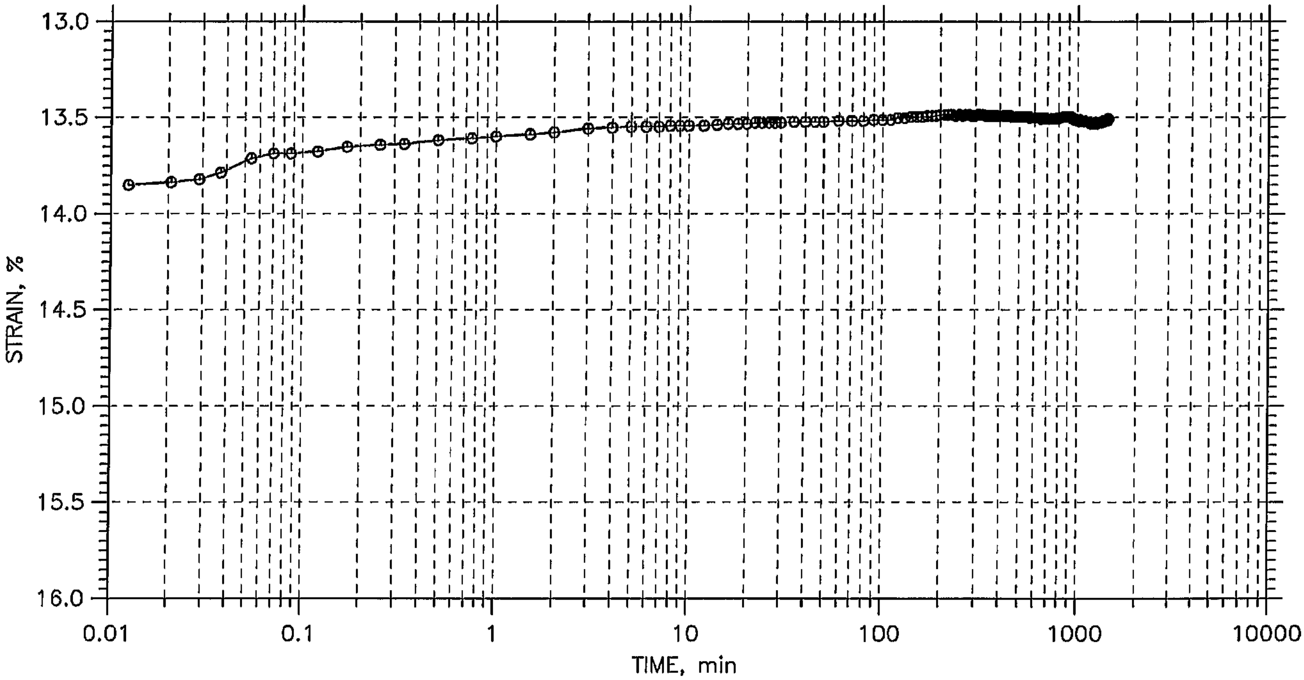
Mon, 27-AUG-2007 12:25:32

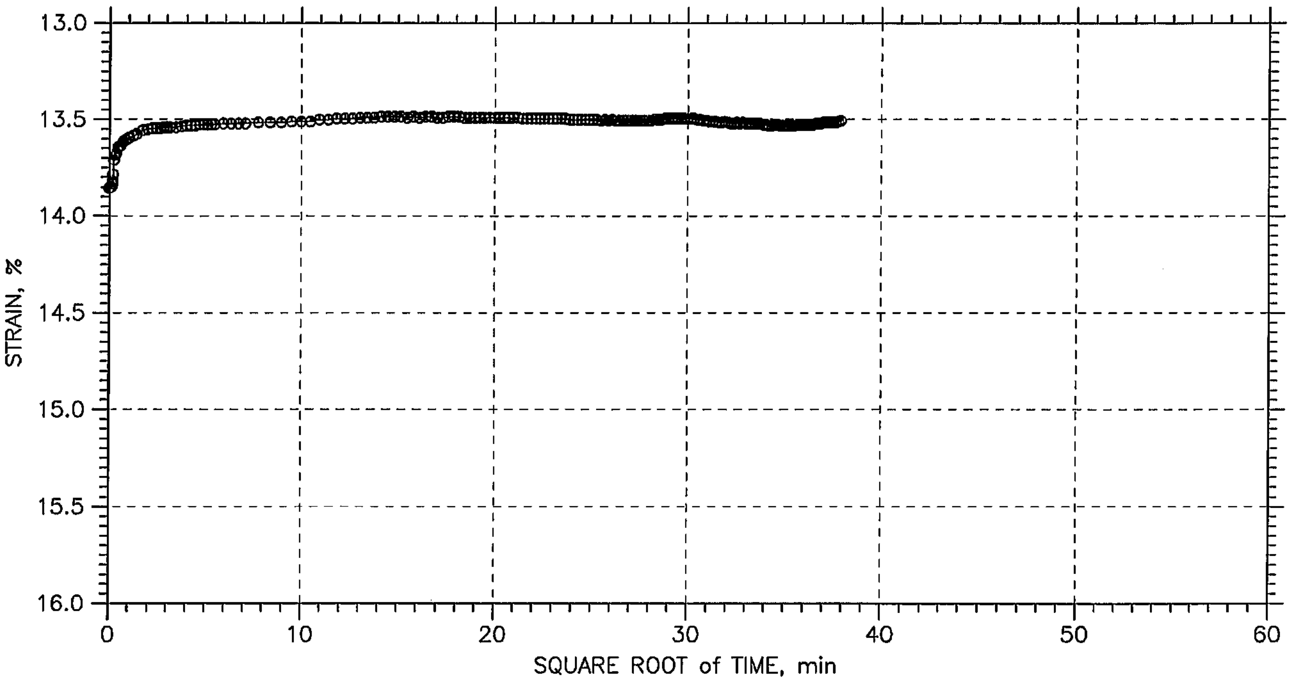
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

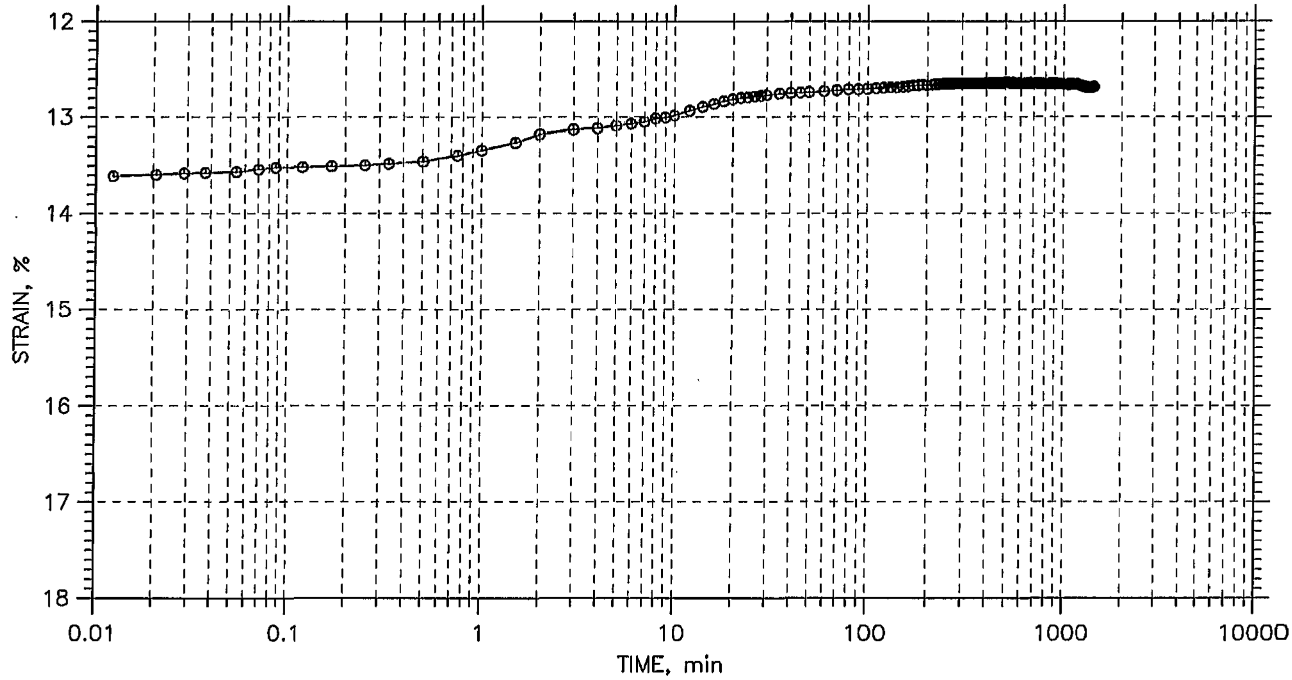
Mon, 27-AUG-2007 12:25:52

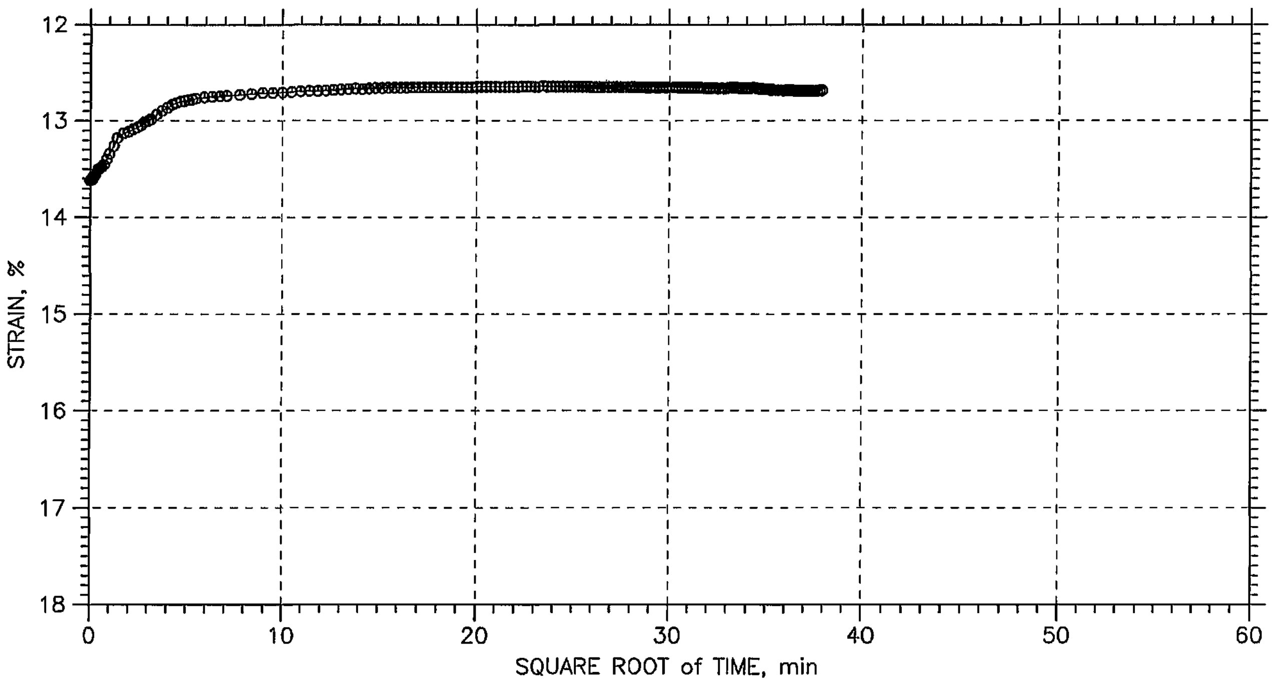
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

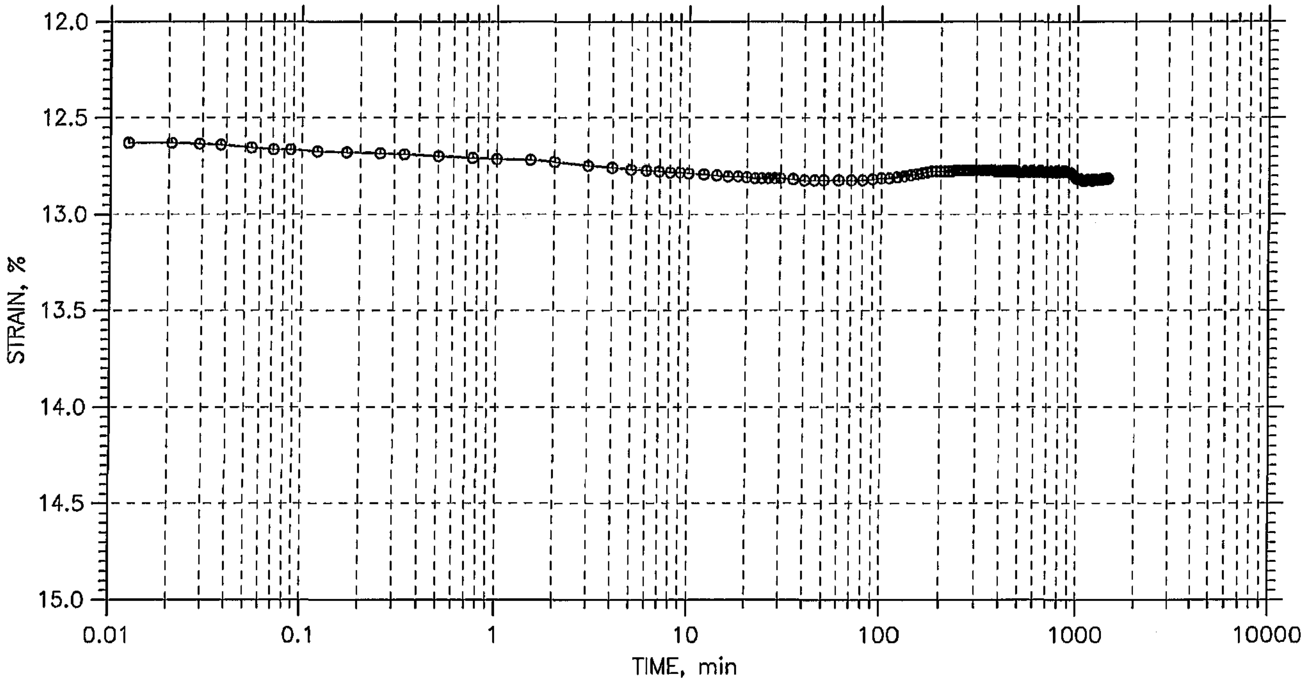
Mon, 27-AUG-2007 12:26:26

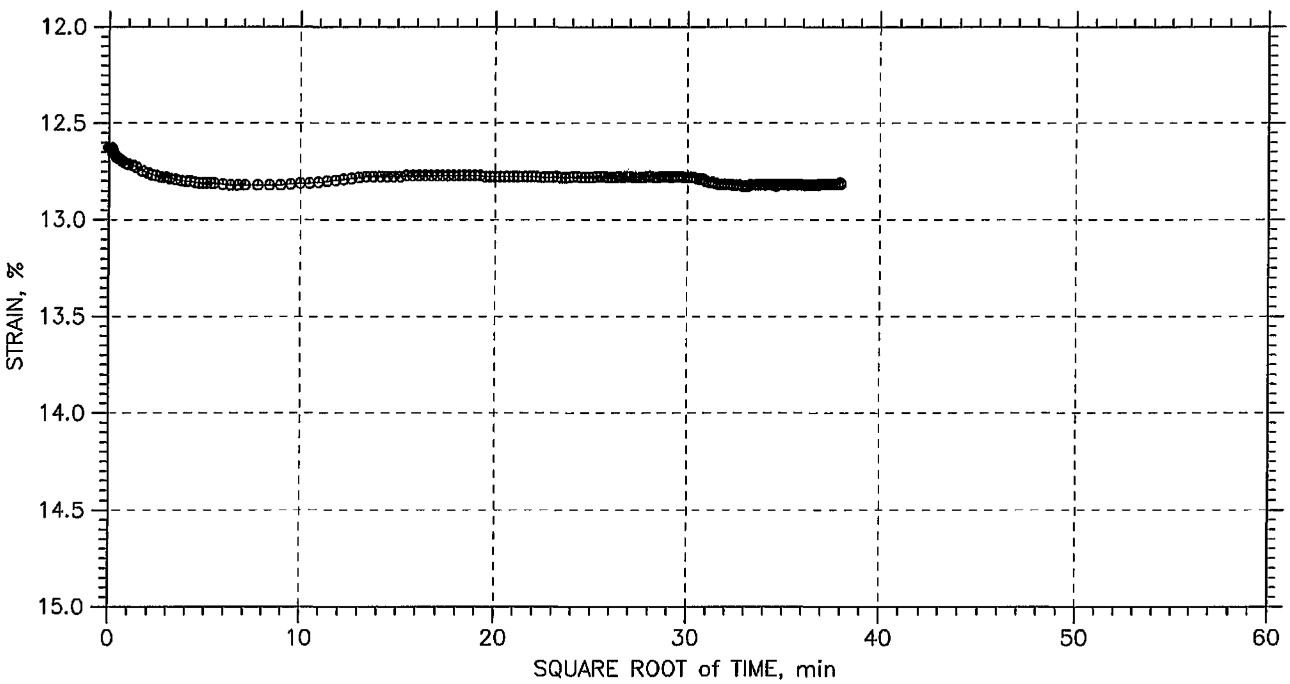
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

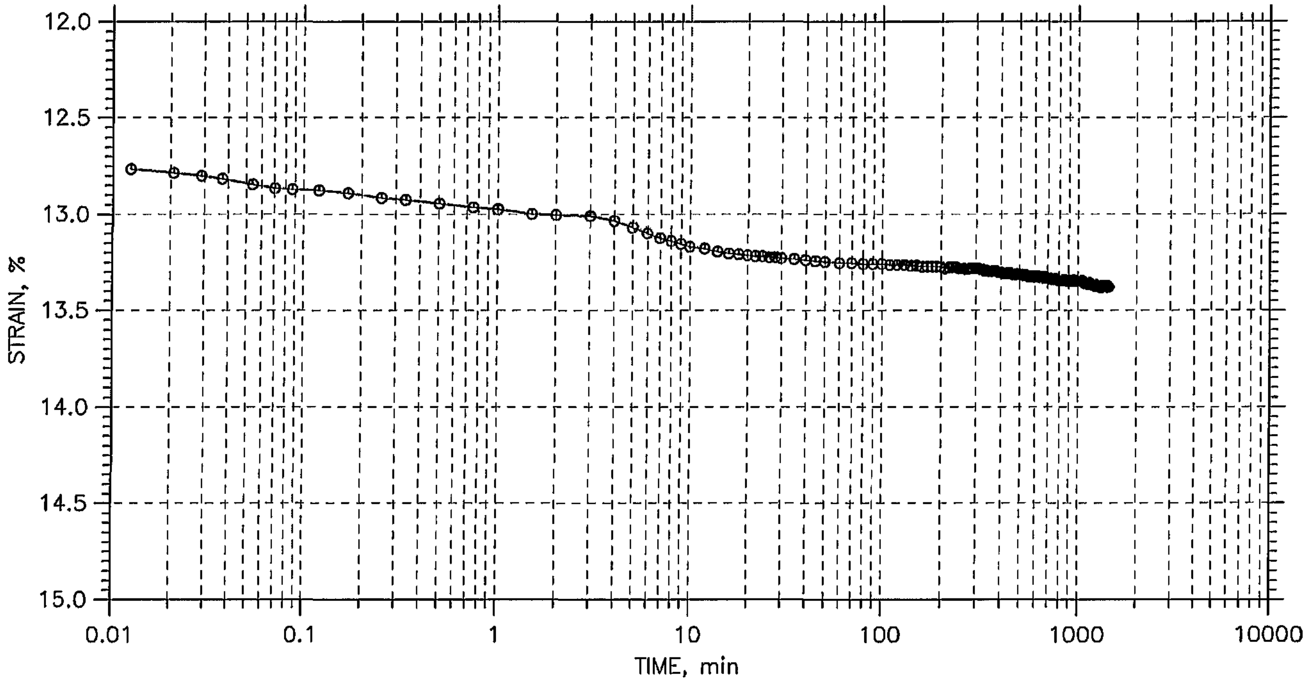
Mon, 27-AUG-2007 12:26:55

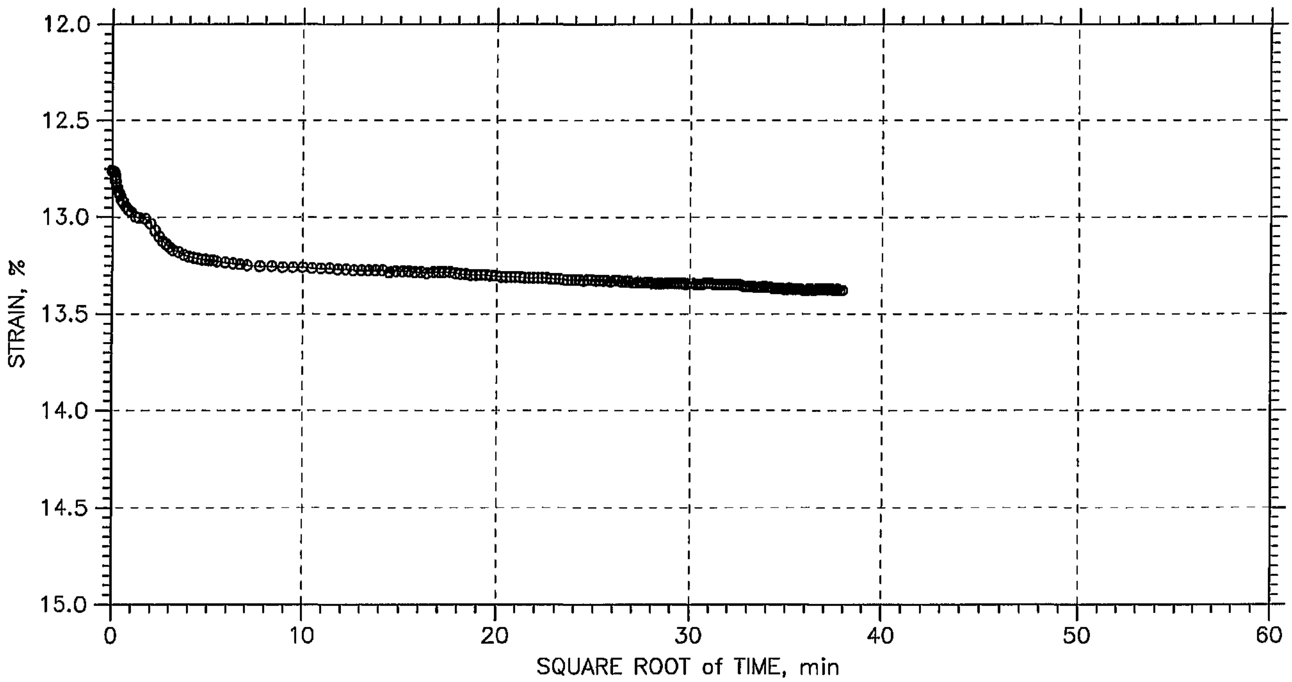
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

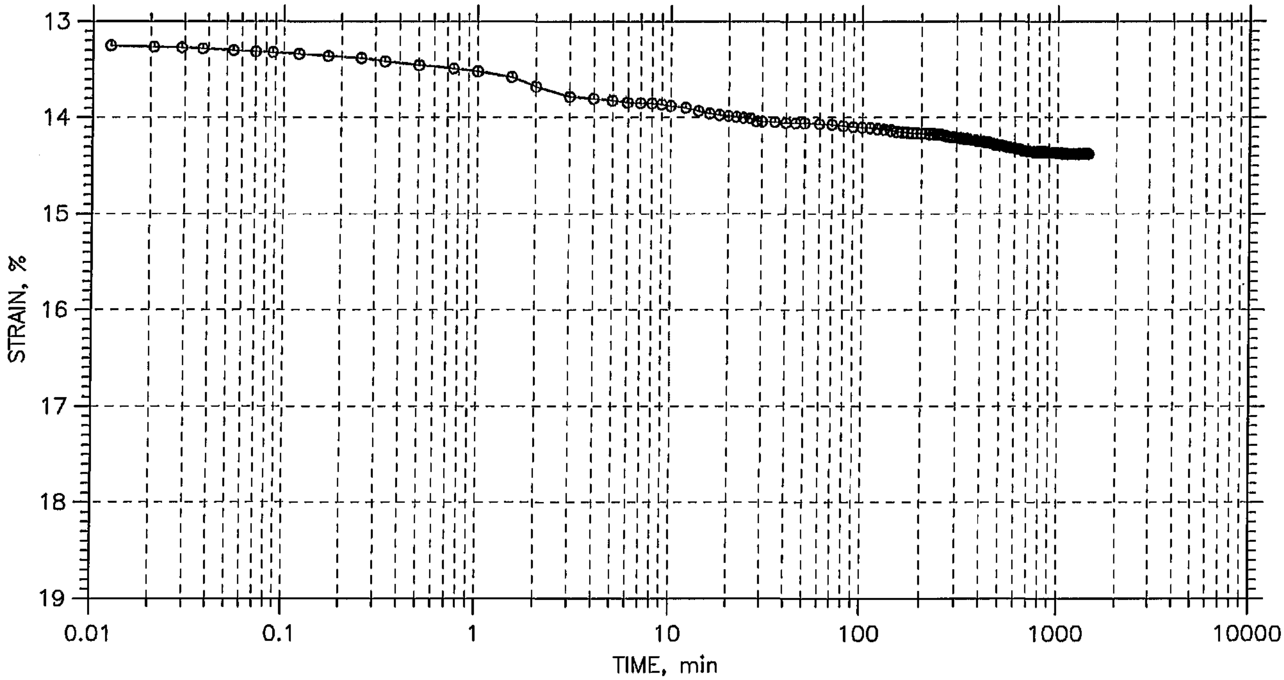
Mon, 27-AUG-2007 12:27:05

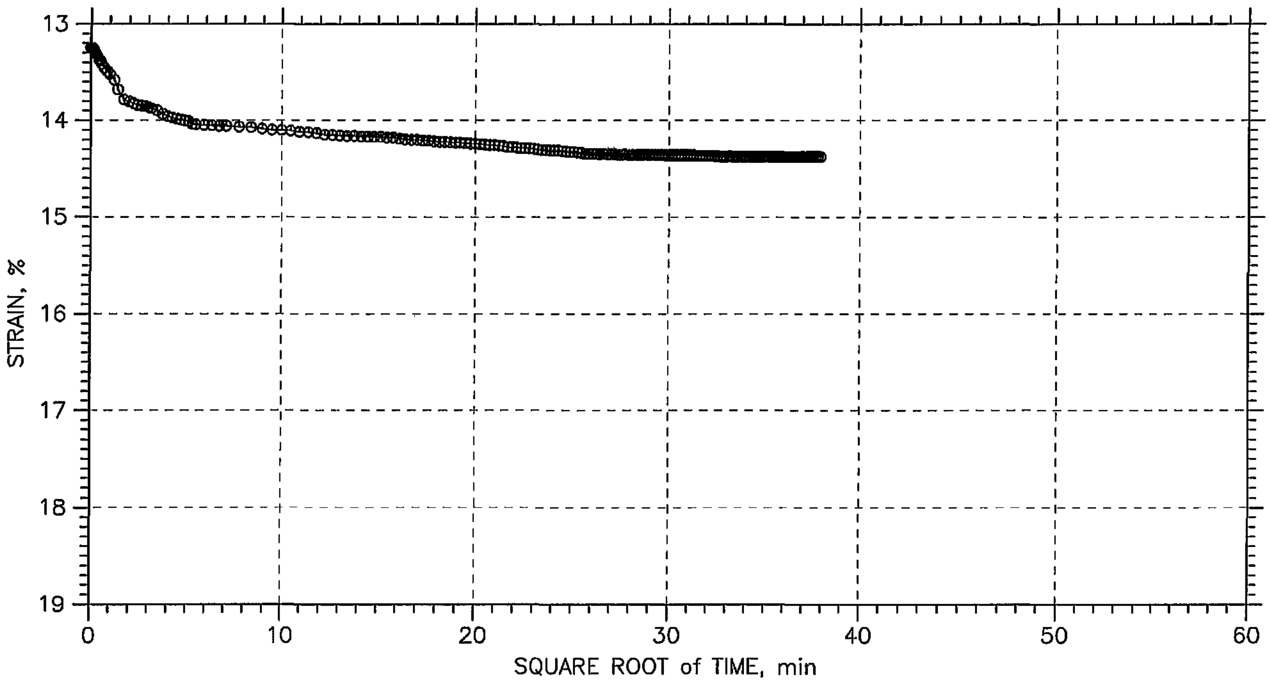
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

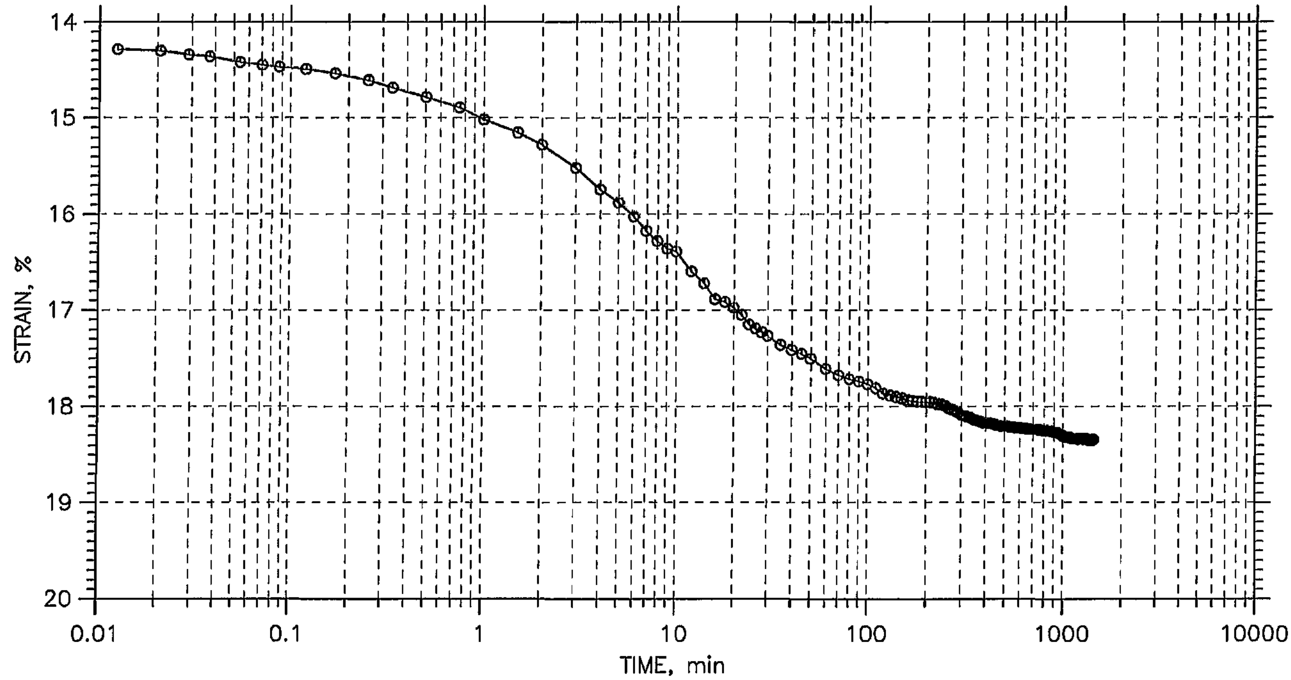
Mon, 27-AUG-2007 12:27:29

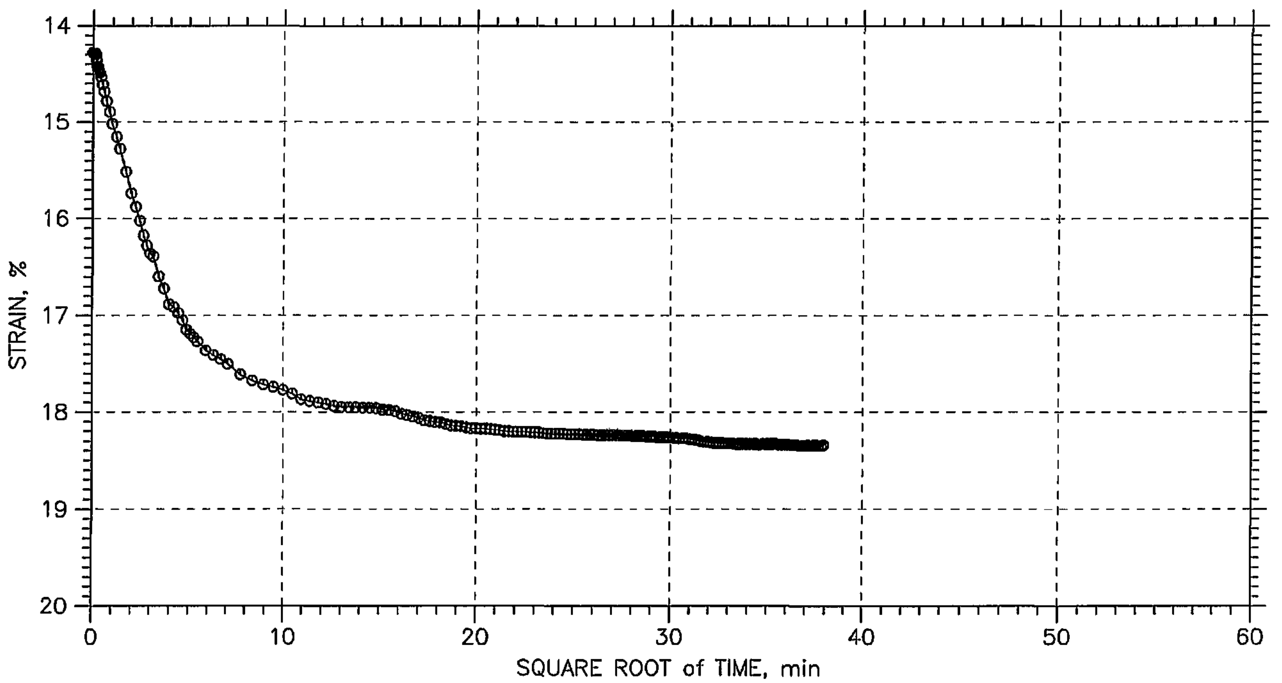
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

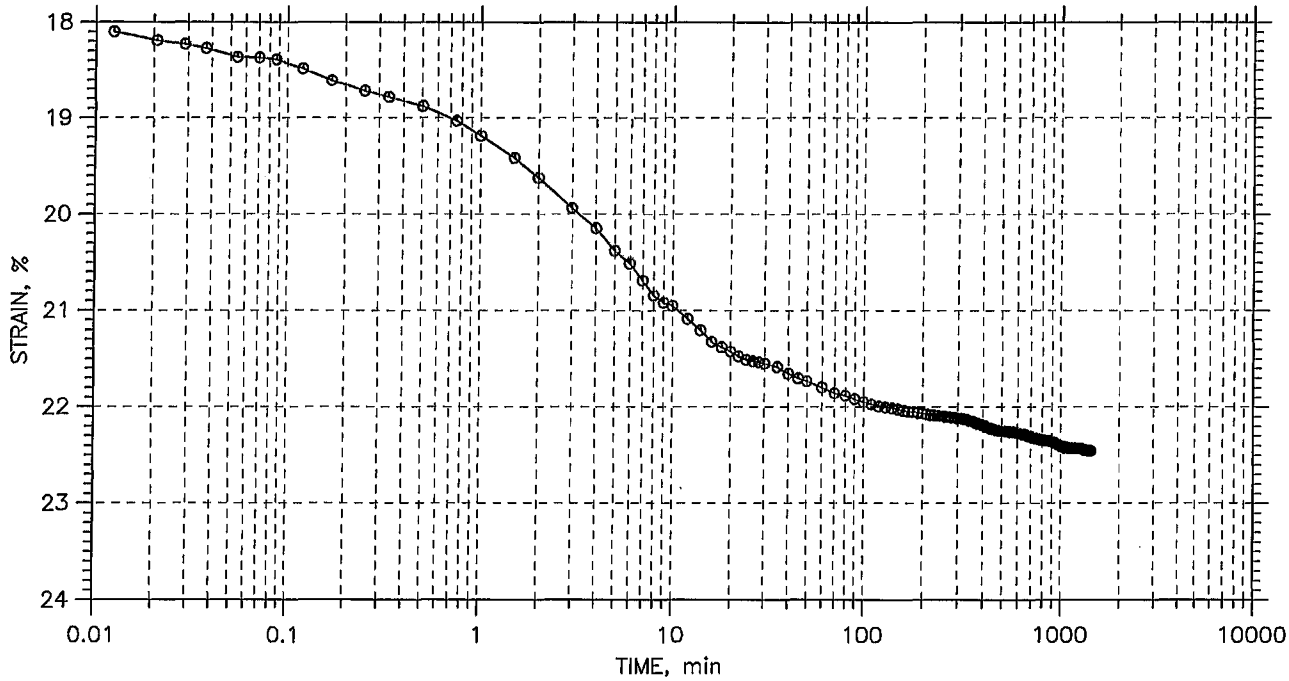
Mon, 27-AUG-2007 12:27:40

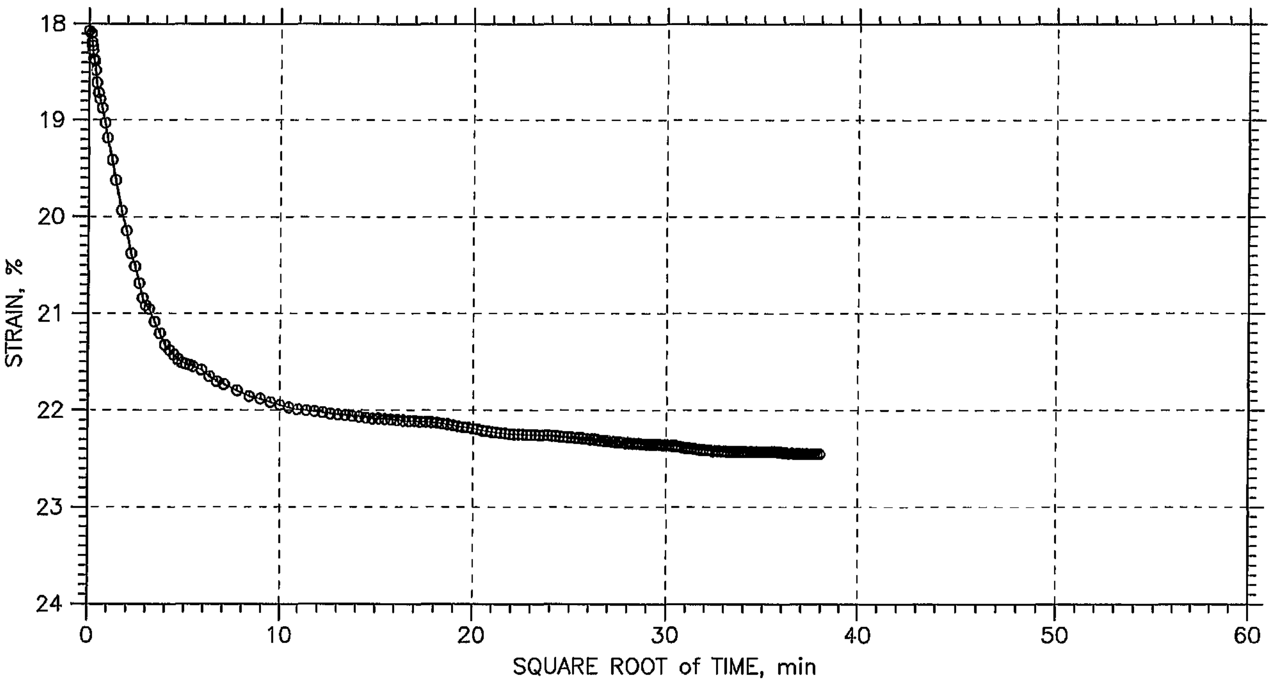
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

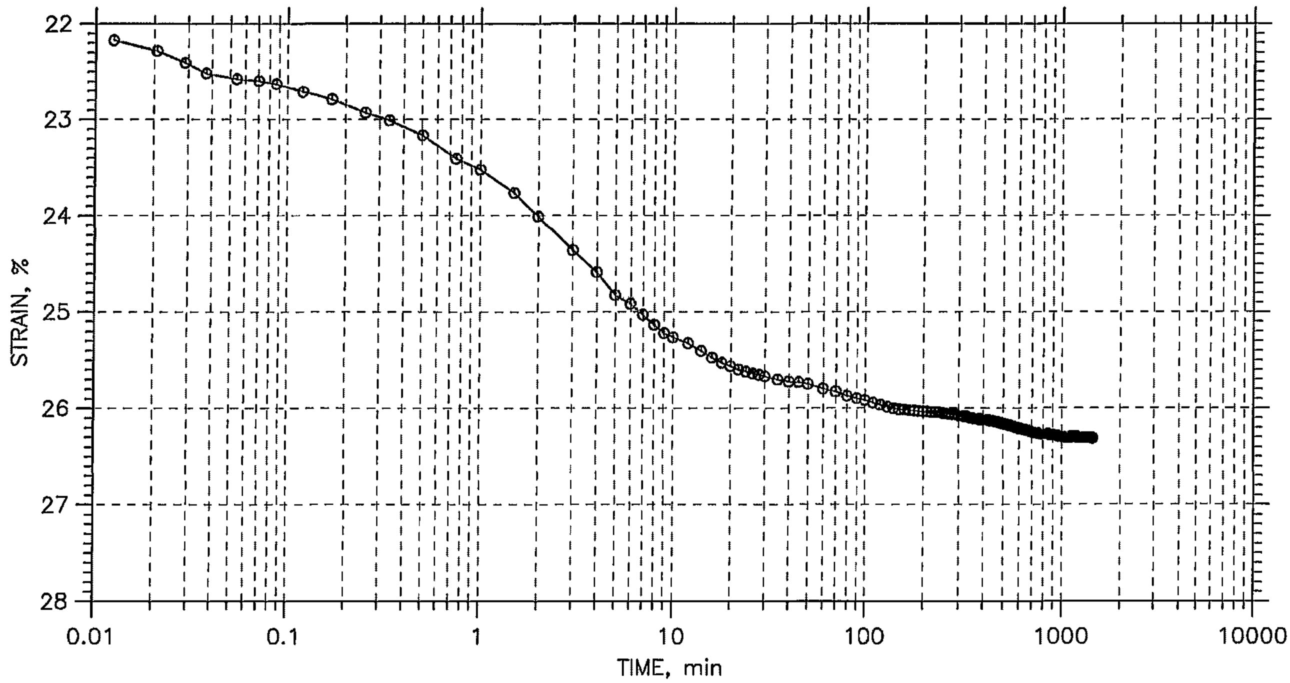
Mon, 27-AUG-2007 12:27:48

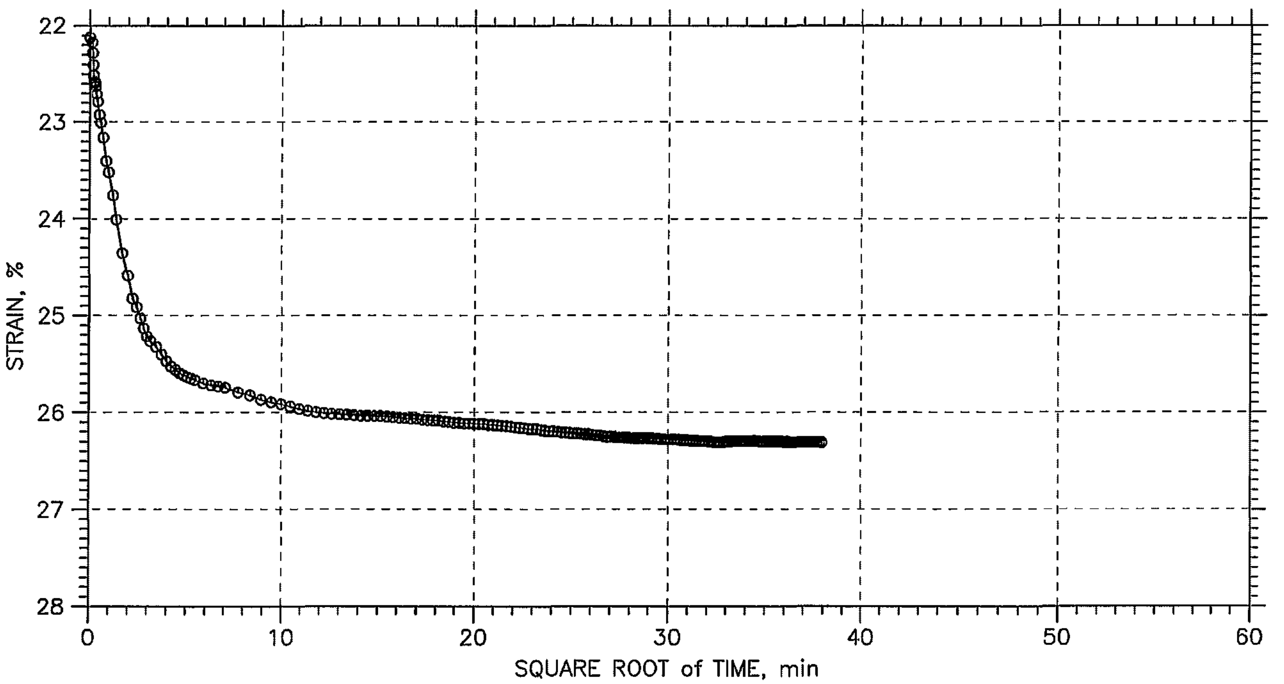
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

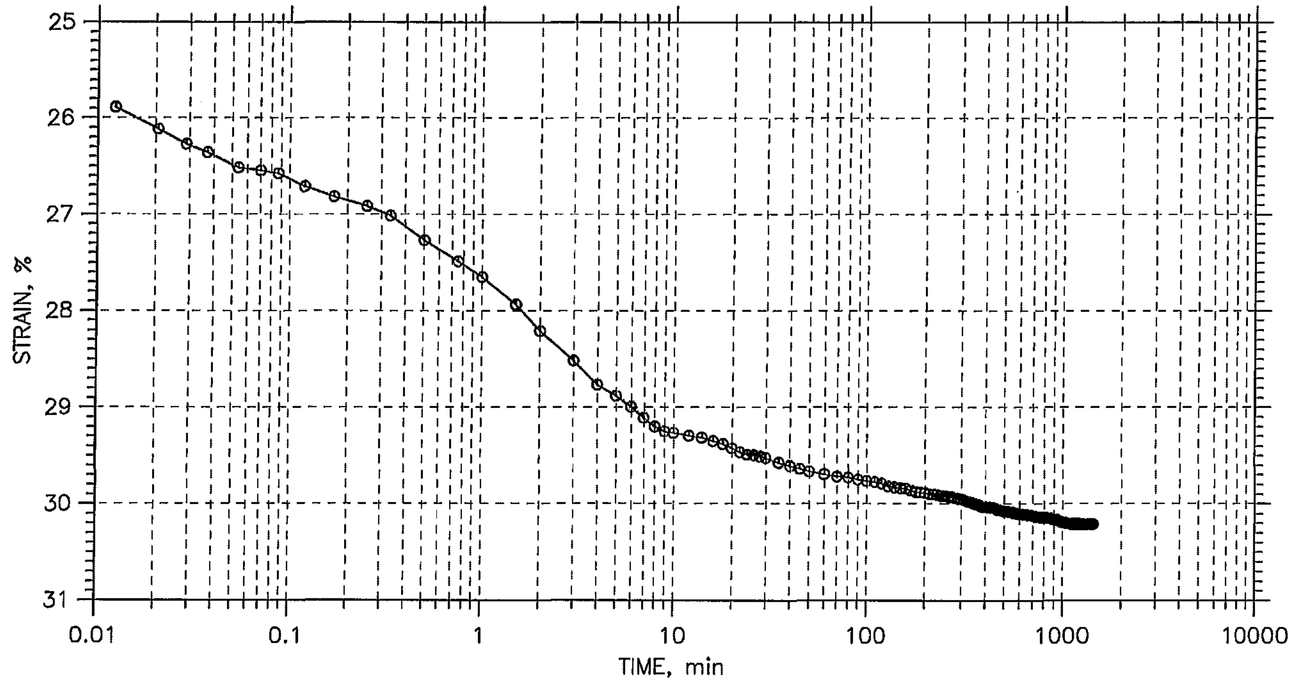
Mon, 27-AUG-2007 12:27:56

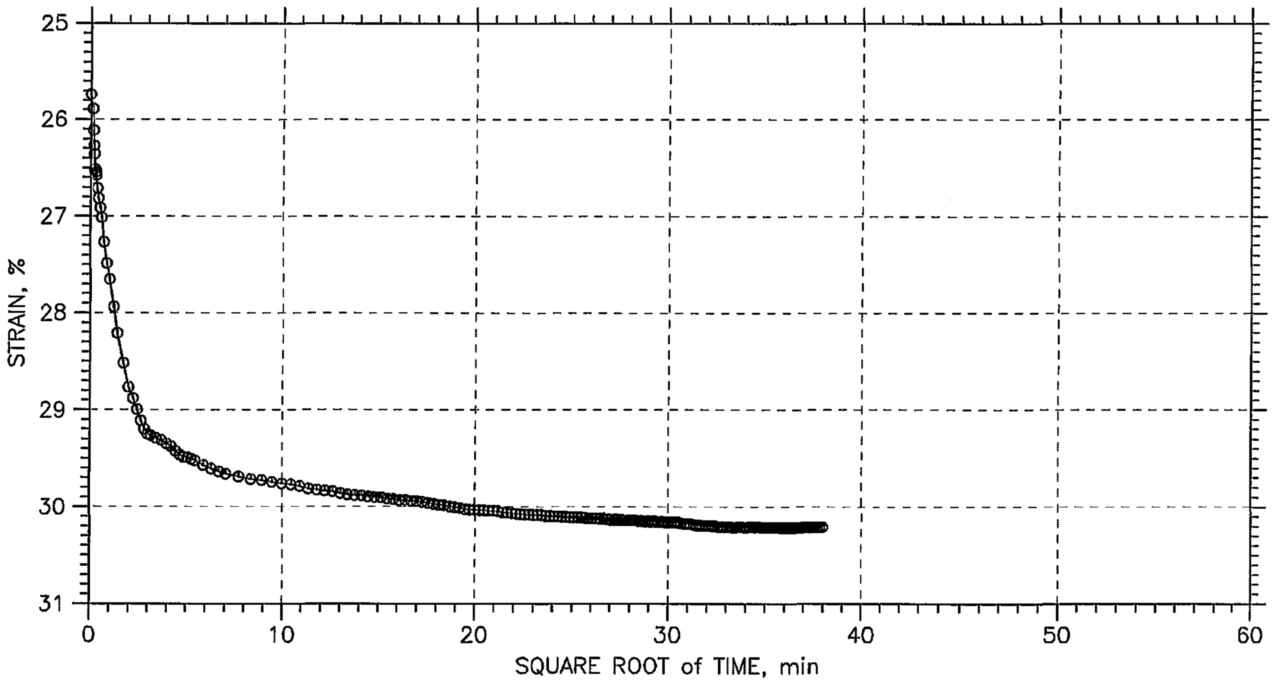
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

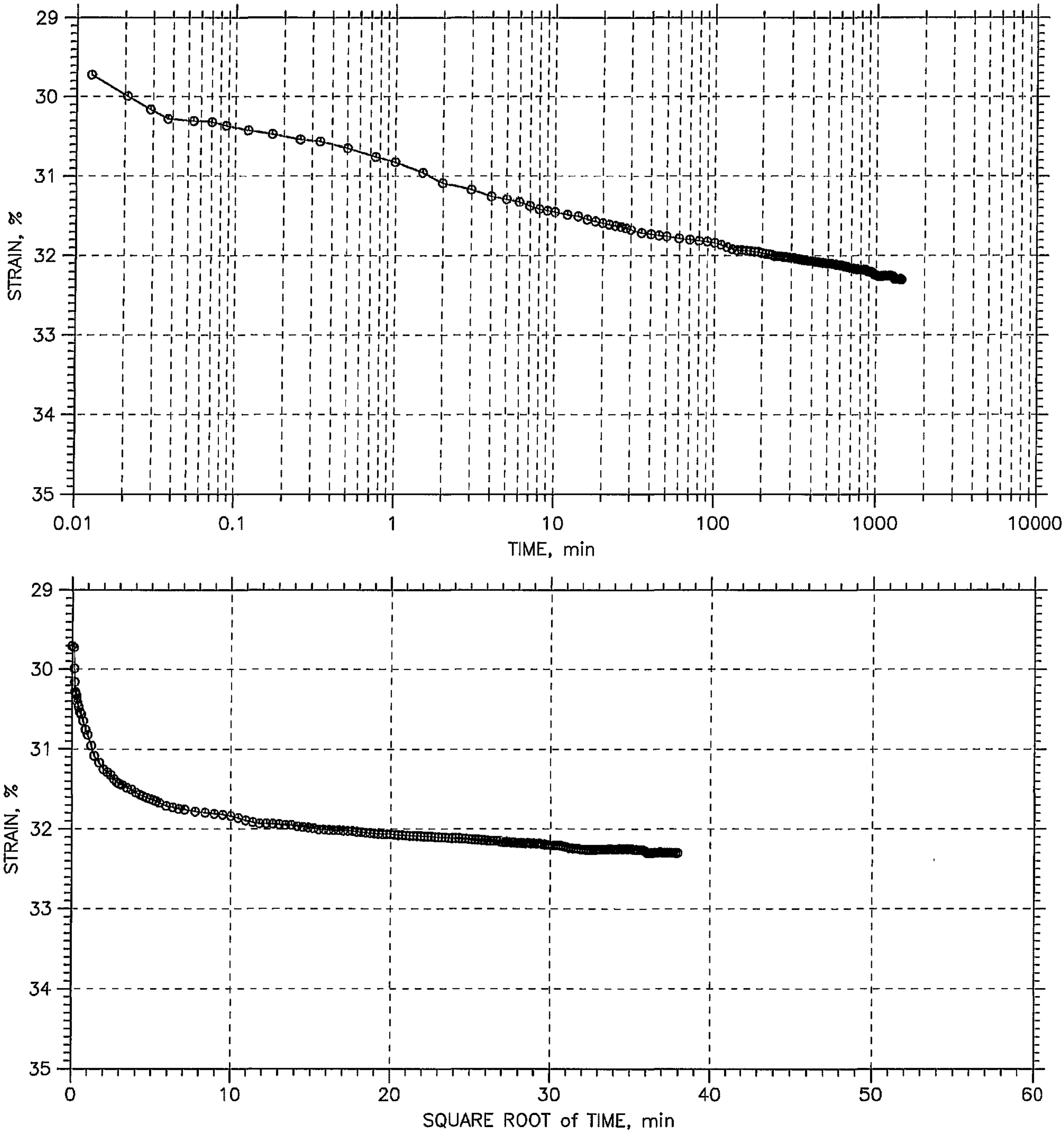
Mon, 27-AUG-2007 12:28:06

CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf



GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

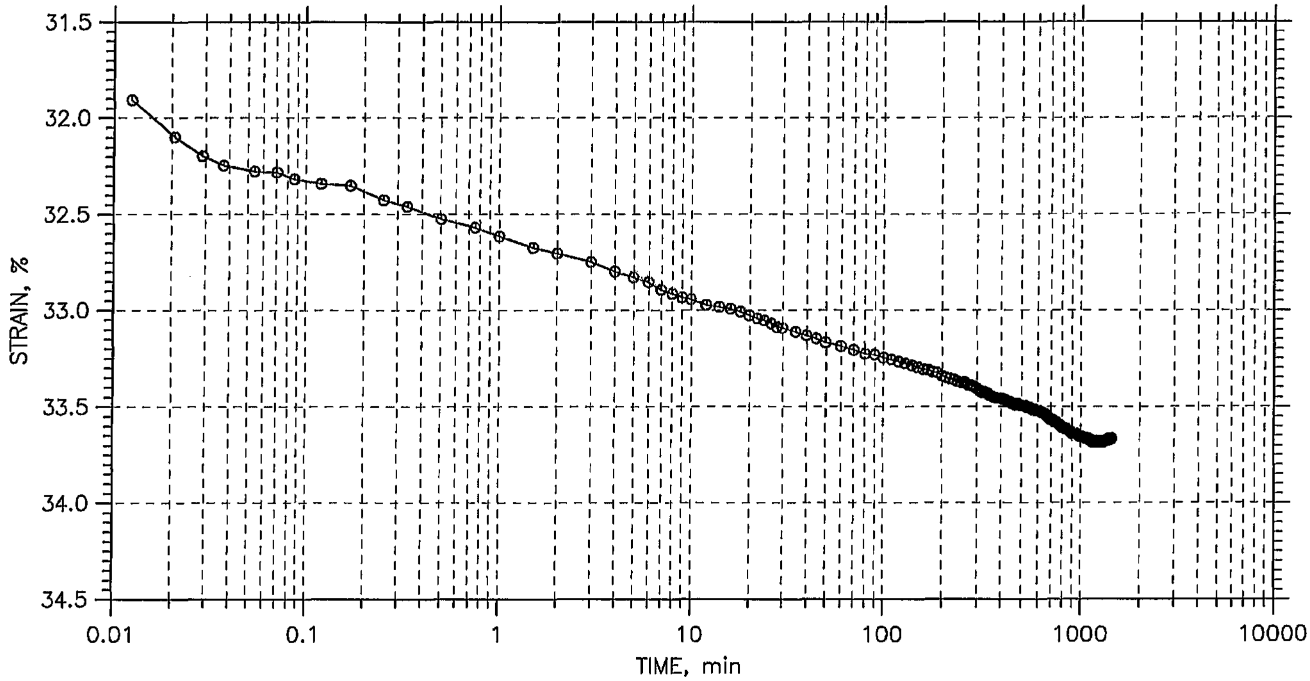
Mon, 27-AUG-2007 12:28:23

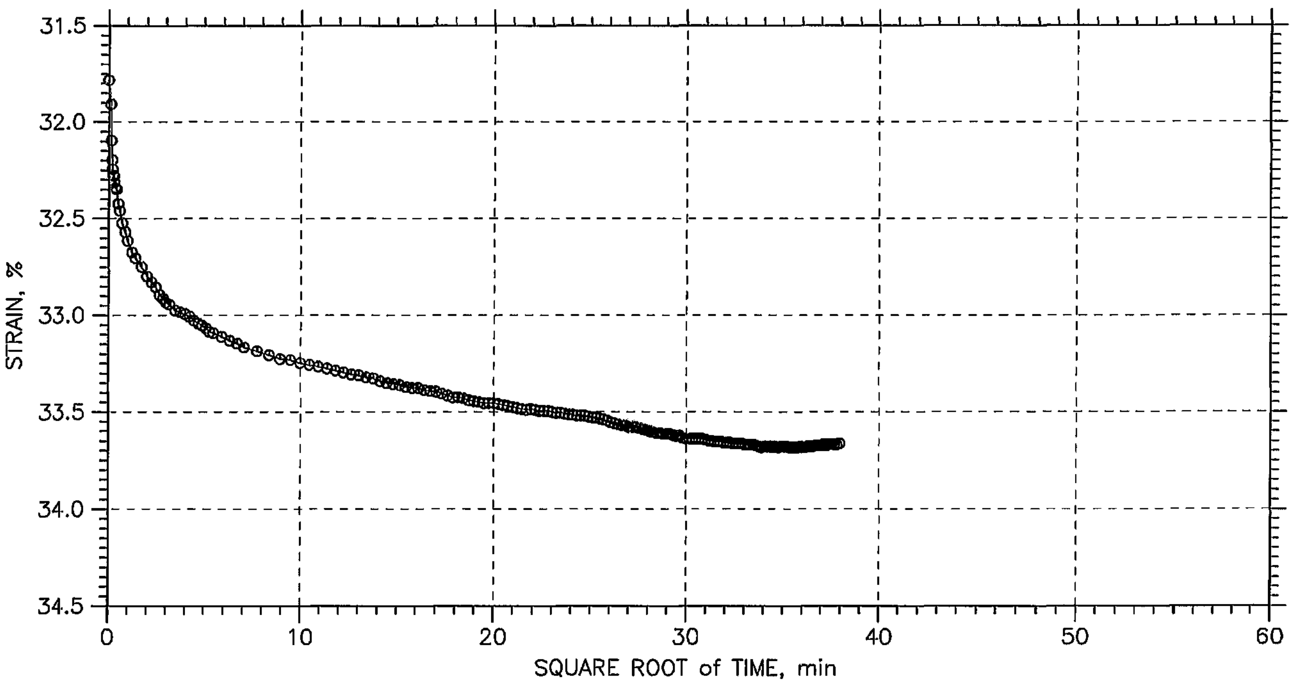
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

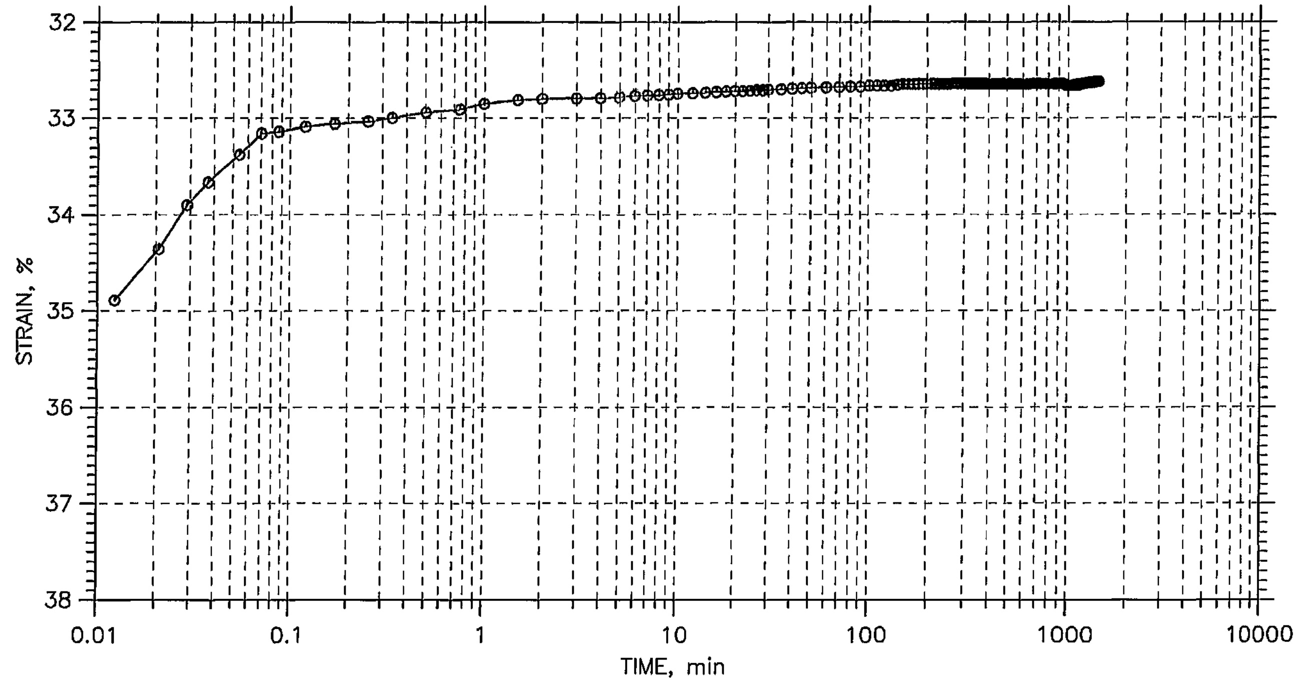
Mon, 27-AUG-2007 12:28:32

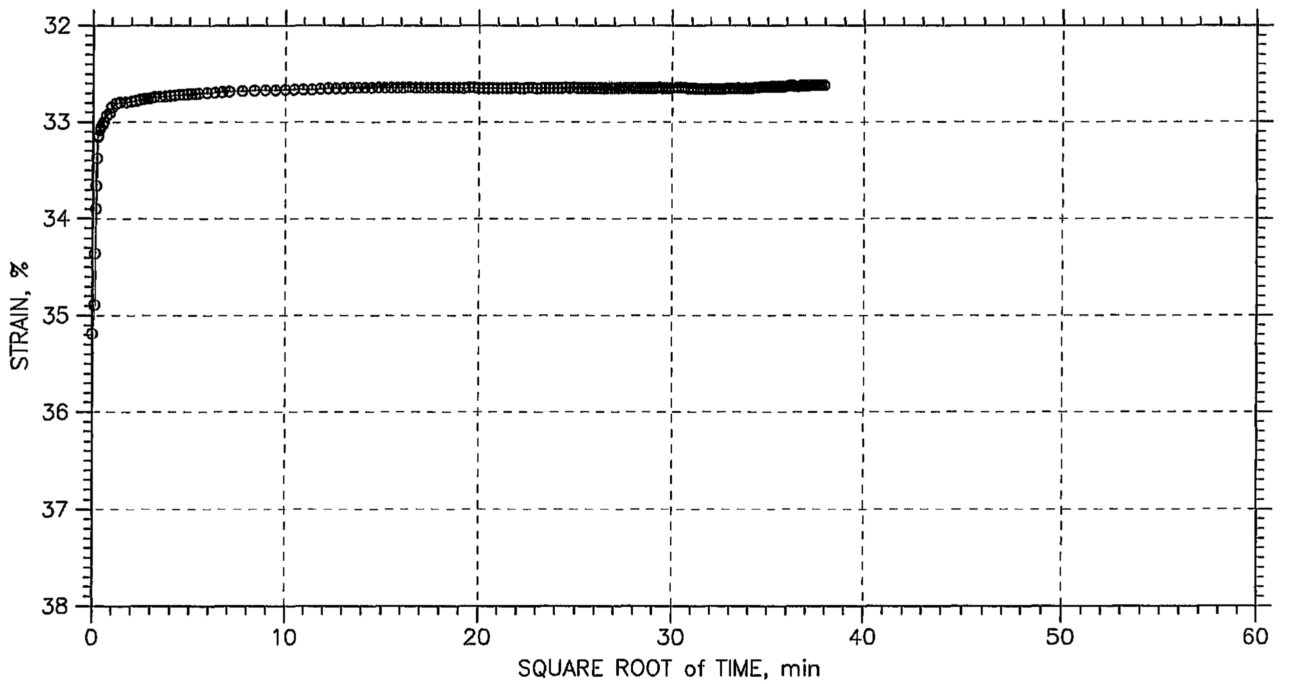
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

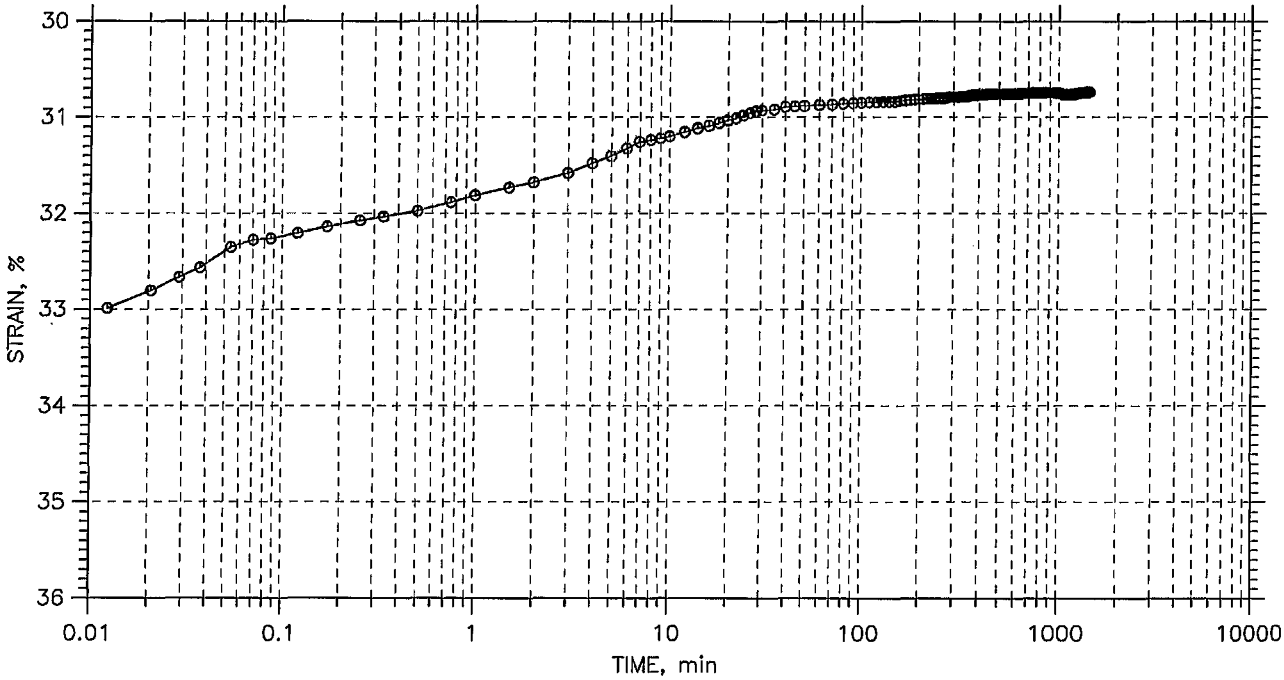
Mon, 27-AUG-2007 12:28:54

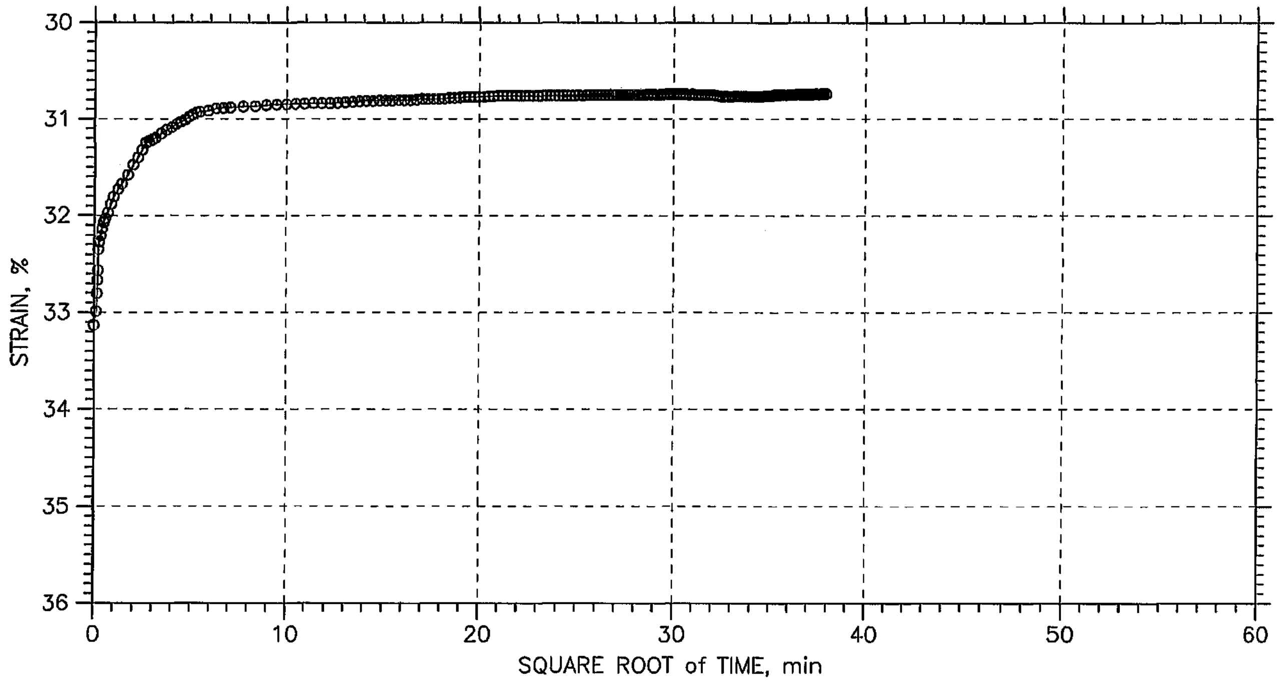
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

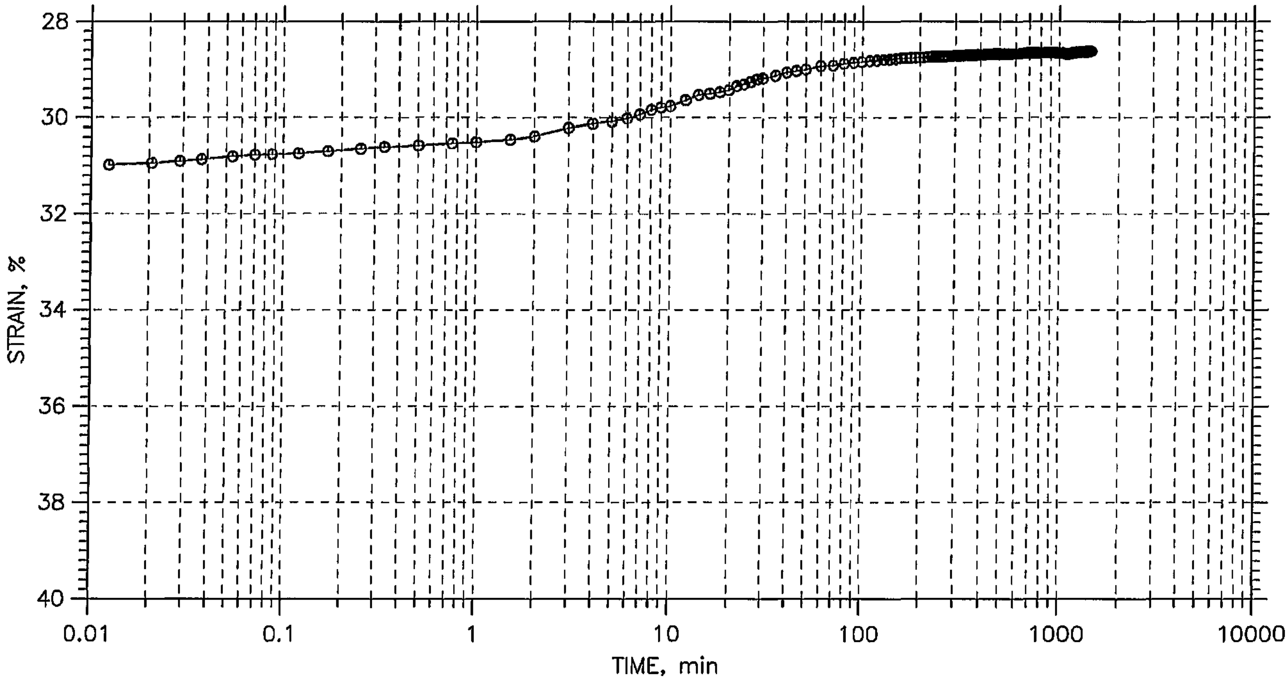
Mon, 27-AUG-2007 12:29:05

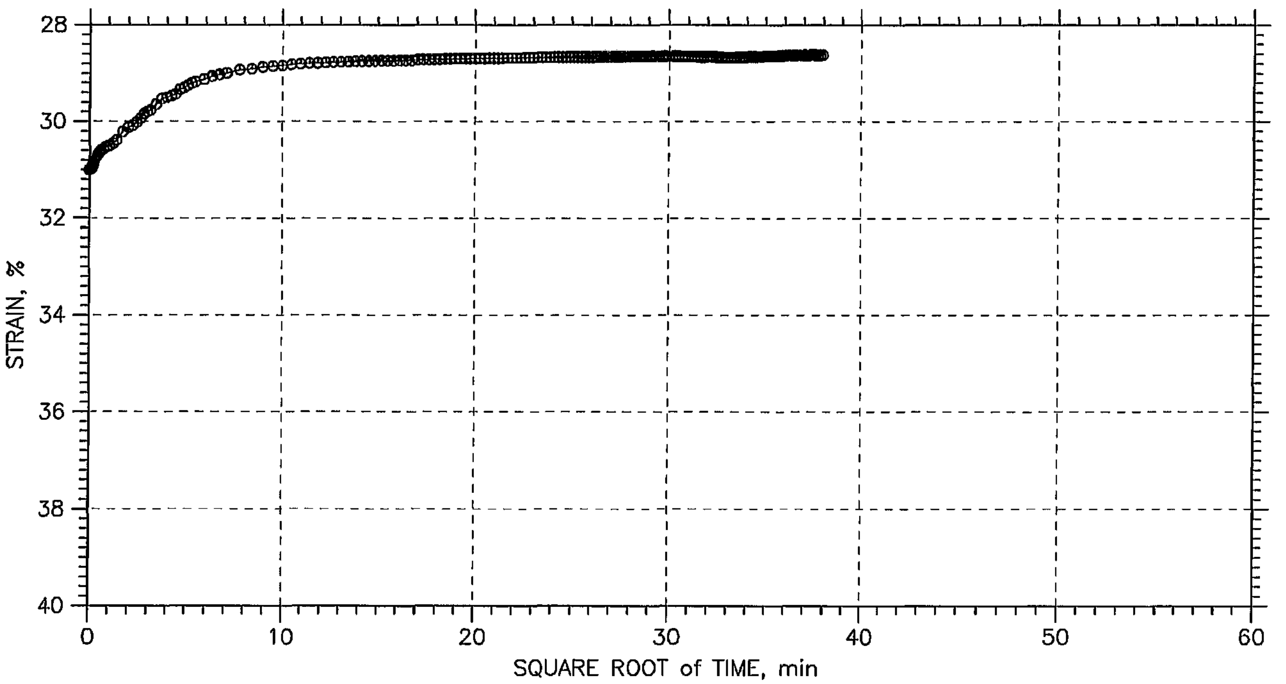
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf

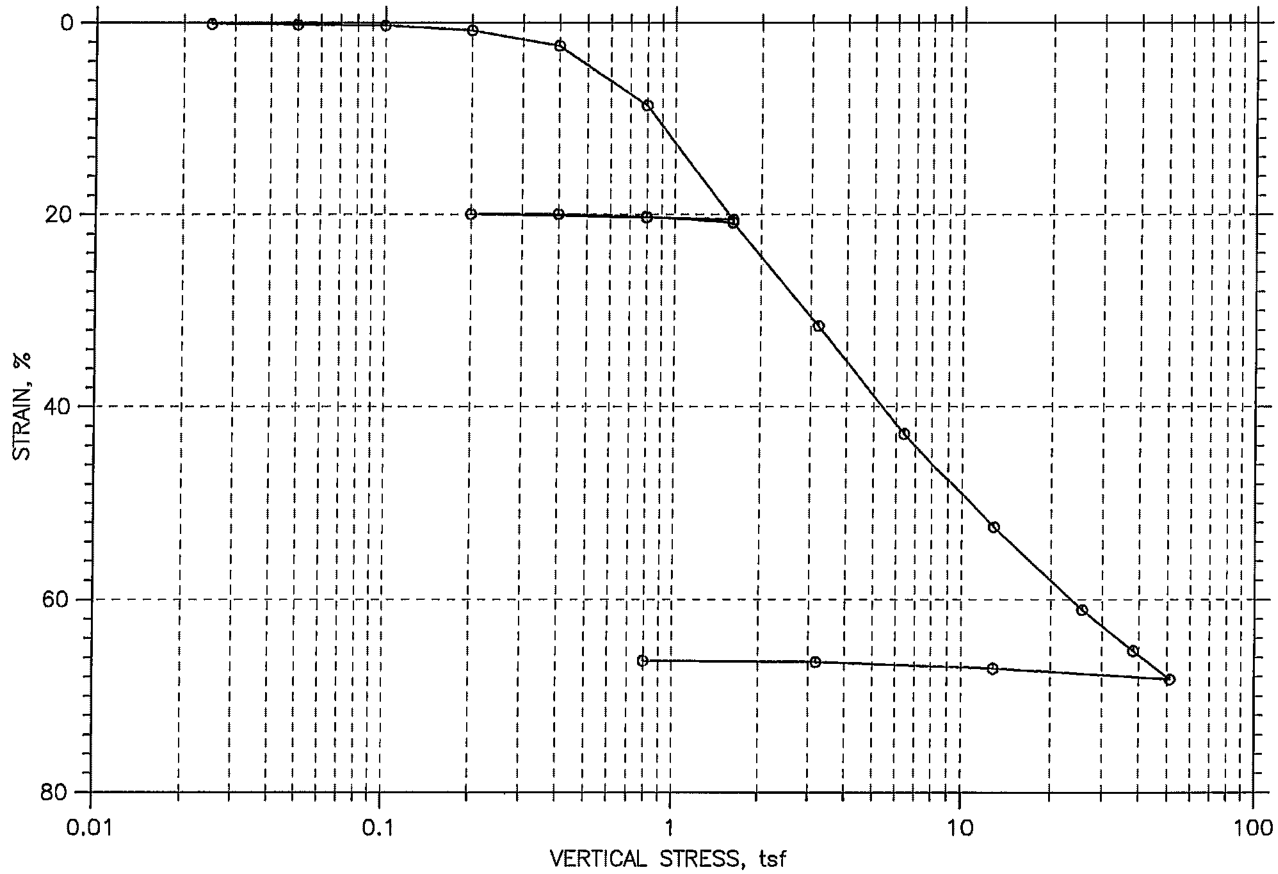


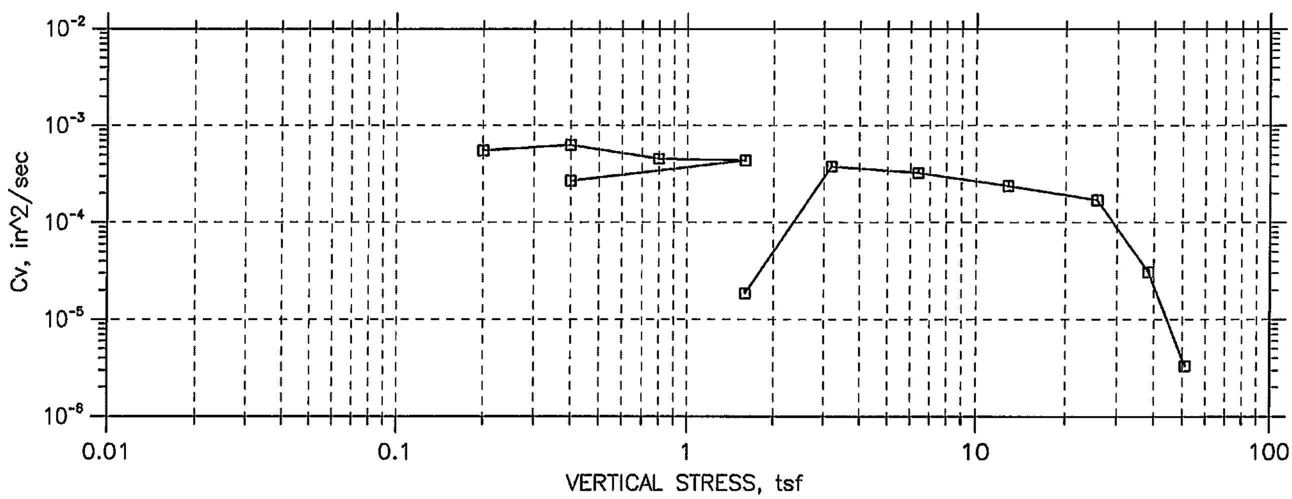


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-05	Test Date: 07/30/07	Depth: 40-42 ft
	Test No.: C-40	Sample Type: tube	Elevation: ---
	Description: Moist, dark reddish gray clay		
	Remarks: System R		

Mon, 27-AUG-2007 12:29:15

CONSOLIDATION TEST DATA
SUMMARY REPORT



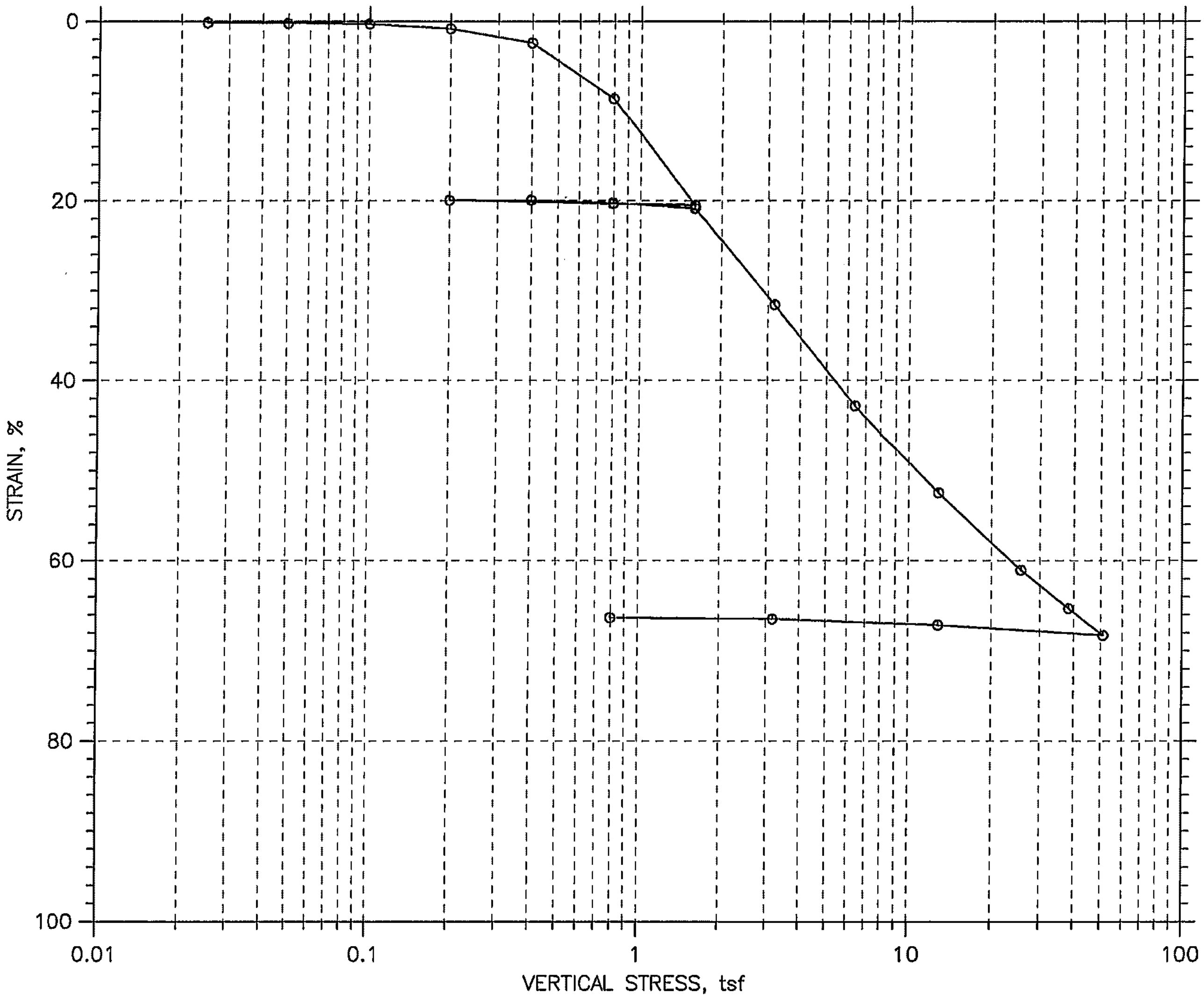


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

Mon, 06-AUG-2007 09:29:24

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	219.42	47.75
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	24.12	71.65
Compression Index: ---				Saturation, %	99.98	99.99
Diameter: 2.5 in		Height: 1 in		Void Ratio	5.57	1.21
LL: 130	PL: 83	PI: 47	GS: 2.54			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

Mon, 06-AUG-2007 09:29:26

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20038
Sample No.: 0318-01
Test No.: C-36

Location: Syracuse, NY
Tested By: md
Test Date: 07/09/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 6-8 ft
Elevation: ---

Soil Description: Moist, white silt
Remarks: System Q

Measured Specific Gravity: 2.54
Initial Void Ratio: 5.57
Final Void Ratio: 1.21

Liquid Limit: 130
Plastic Limit: 83
Plasticity Index: 47

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	30914	RING		tasty
Wt. Container + Wet Soil, gm	144.6	315.68	262.33	46.94
Wt. Container + Dry Soil, gm	51.51	247.49	247.49	34.39
Wt. Container, gm	8.09	216.41	216.41	8.11
Wt. Dry Soil, gm	43.42	31.078	31.078	26.28
Water Content, %	214.39	219.42	47.75	47.75
Void Ratio	---	5.57	1.21	---
Degree of Saturation, %	---	99.98	99.99	---
Dry Unit Weight, pcf	---	24.119	71.65	---

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20038
Sample No.: 0318-01
Test No.: C-36

Location: Syracuse, NY
Tested By: md
Test Date: 07/09/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 6-8 ft
Elevation: ---

Soil Description: Moist, white silt
Remarks: System Q

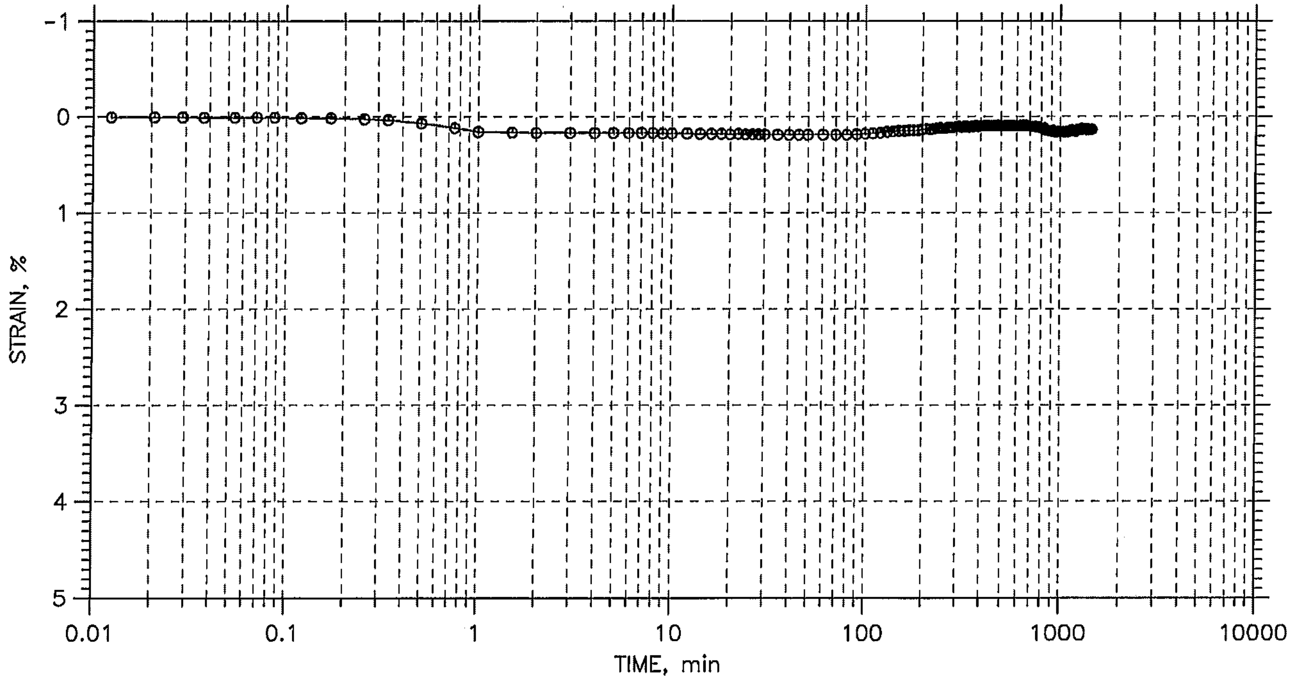
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.025	0.001319	5.566	0.13	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
2	0.05	0.001951	5.561	0.20	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
3	0.1	0.00267	5.557	0.27	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
4	0.2	0.007922	5.522	0.79	1.5	0.0	5.52e-004	0.00e+000	5.52e-004
5	0.4	0.02394	5.417	2.39	1.3	0.0	6.30e-004	0.00e+000	6.30e-004
6	0.8	0.08604	5.009	8.60	1.4	1.8	5.15e-004	4.08e-004	4.55e-004
7	1.6	0.2052	4.225	20.52	1.4	0.0	4.37e-004	0.00e+000	4.37e-004
8	0.8	0.2033	4.238	20.33	0.2	0.0	2.37e-003	0.00e+000	2.37e-003
9	0.2	0.1996	4.262	19.96	0.4	0.0	1.32e-003	0.00e+000	1.32e-003
10	0.4	0.1996	4.262	19.96	2.0	0.0	2.69e-004	0.00e+000	2.69e-004
11	0.8	0.2024	4.244	20.24	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
12	1.6	0.2086	4.203	20.86	27.8	0.0	1.87e-005	0.00e+000	1.87e-005
13	3.2	0.3157	3.499	31.57	1.2	0.0	3.80e-004	0.00e+000	3.80e-004
14	6.4	0.428	2.760	42.80	1.0	0.0	3.26e-004	0.00e+000	3.26e-004
15	12.8	0.5247	2.125	52.47	0.9	0.0	2.38e-004	0.00e+000	2.38e-004
16	25.6	0.6106	1.560	61.06	0.9	0.0	1.70e-004	0.00e+000	1.70e-004
17	38.4	0.6531	1.281	65.31	3.6	0.0	3.09e-005	0.00e+000	3.09e-005
18	51.2	0.6827	1.086	68.27	27.3	0.0	3.32e-006	0.00e+000	3.32e-006
19	12.8	0.6715	1.159	67.15	0.1	0.0	1.12e-003	0.00e+000	1.12e-003
20	3.2	0.6647	1.204	66.47	0.2	0.0	5.54e-004	0.00e+000	5.54e-004
21	0.8	0.6634	1.213	66.34	0.0	0.0	0.00e+000	0.00e+000	0.00e+000

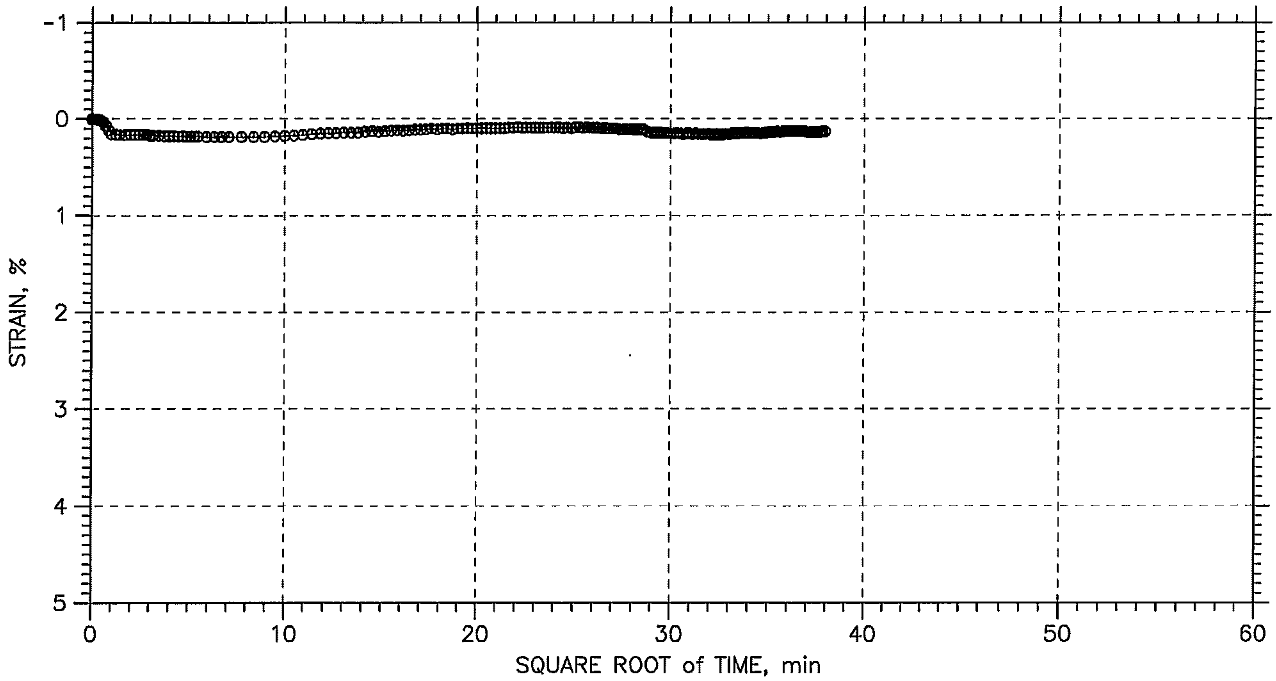
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

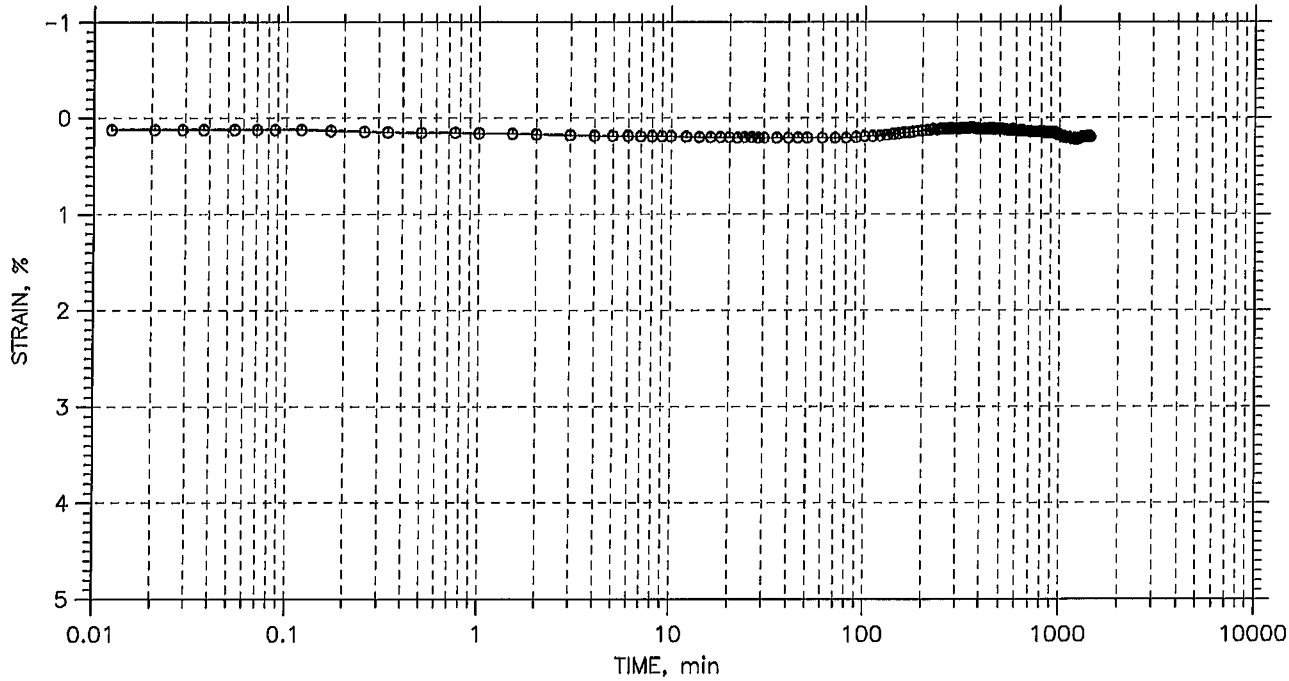
Mon, 06-AUG-2007 09:30:09

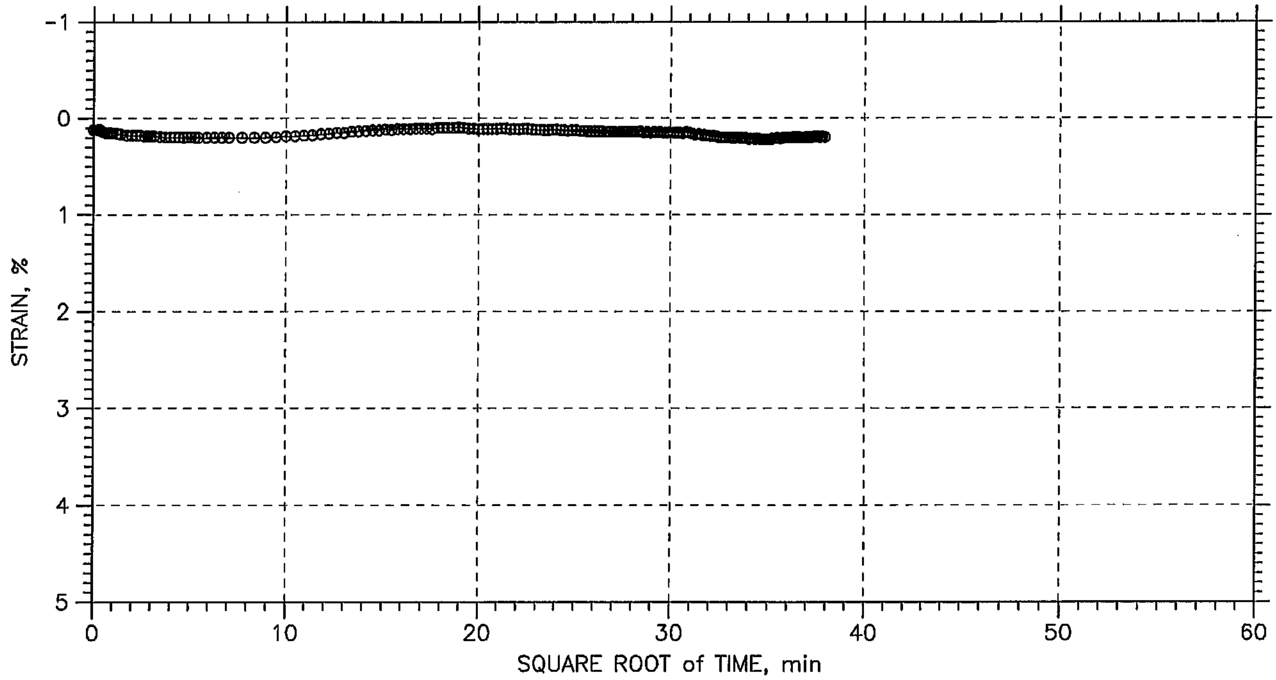
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

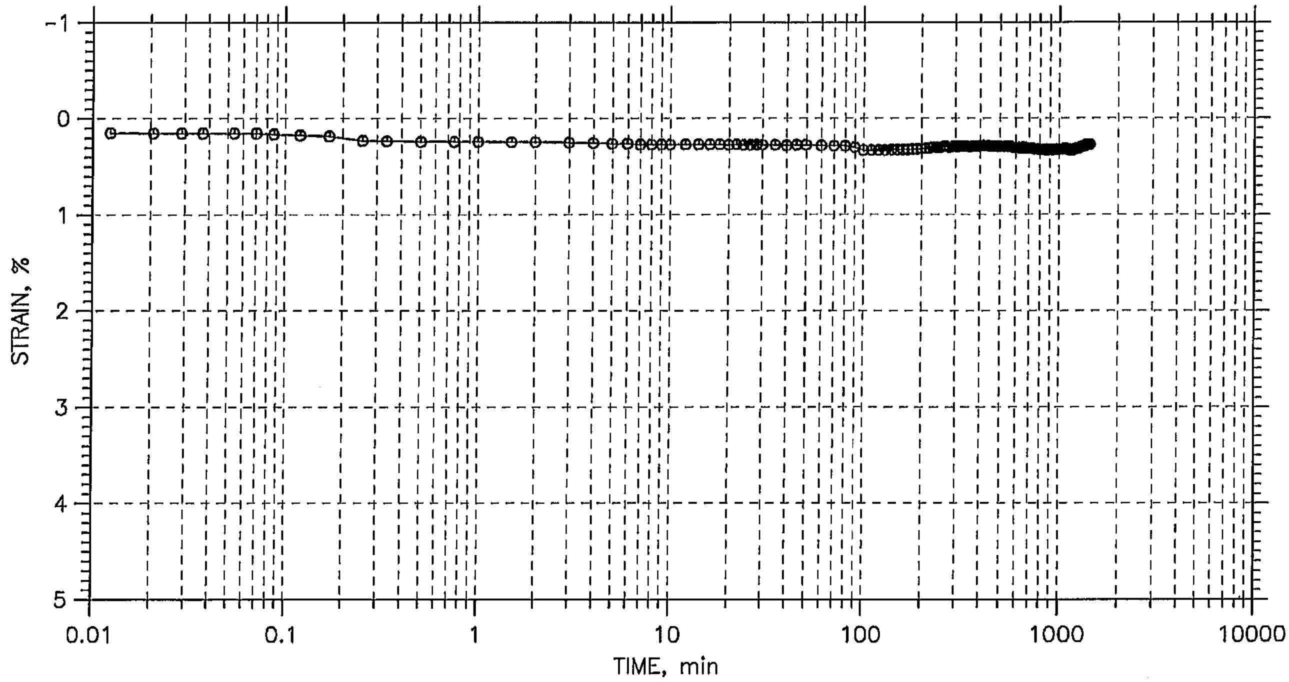
Mon, 06-AUG-2007 09:30:24

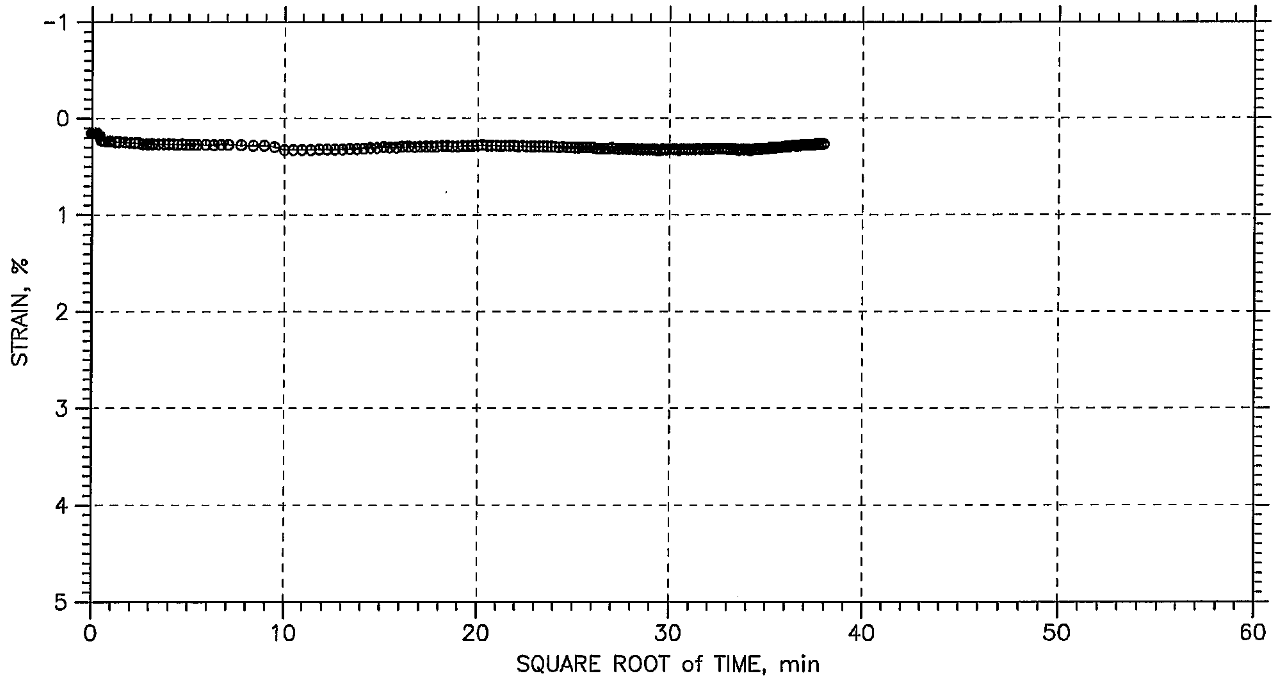
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

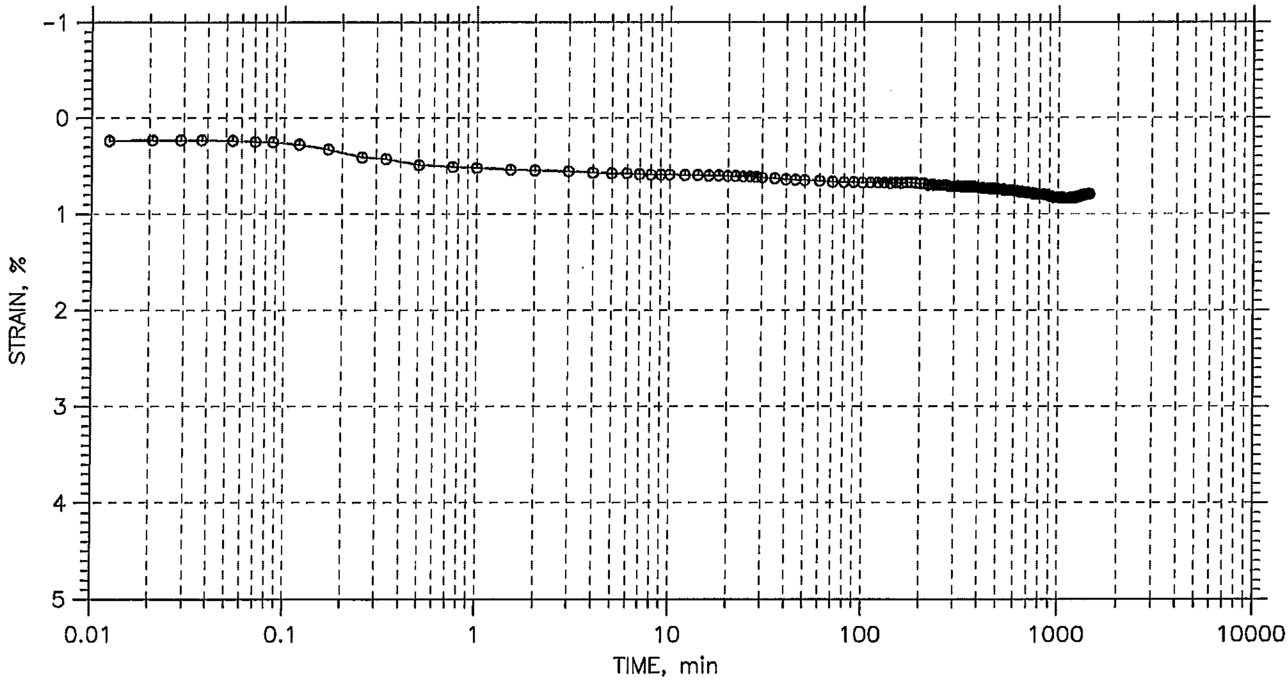
Mon, 06-AUG-2007 09:30:46

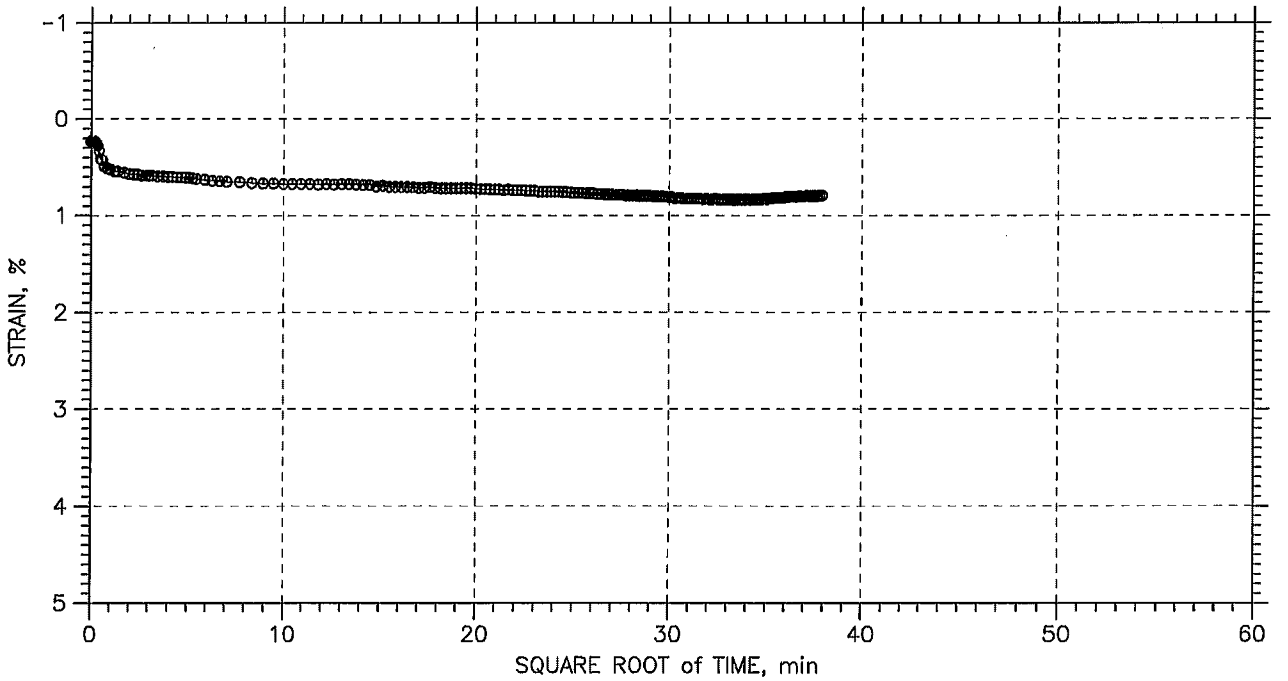
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

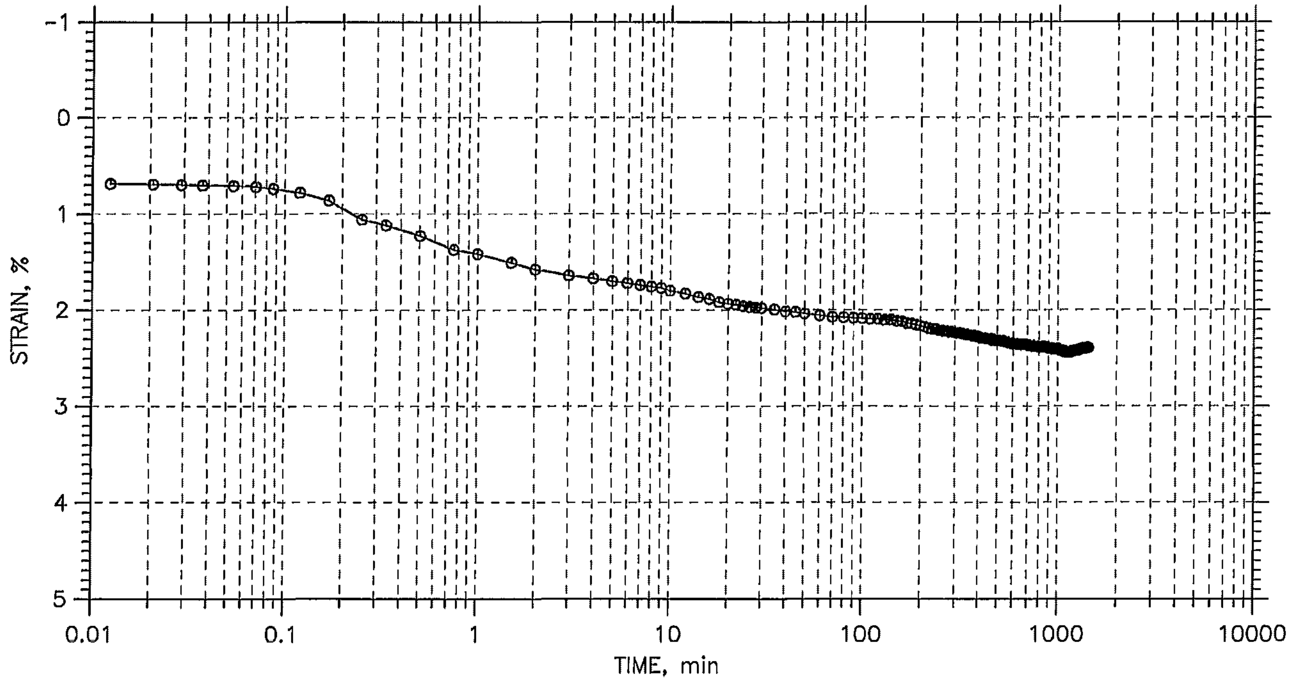
Mon, 06-AUG-2007 09:31:14

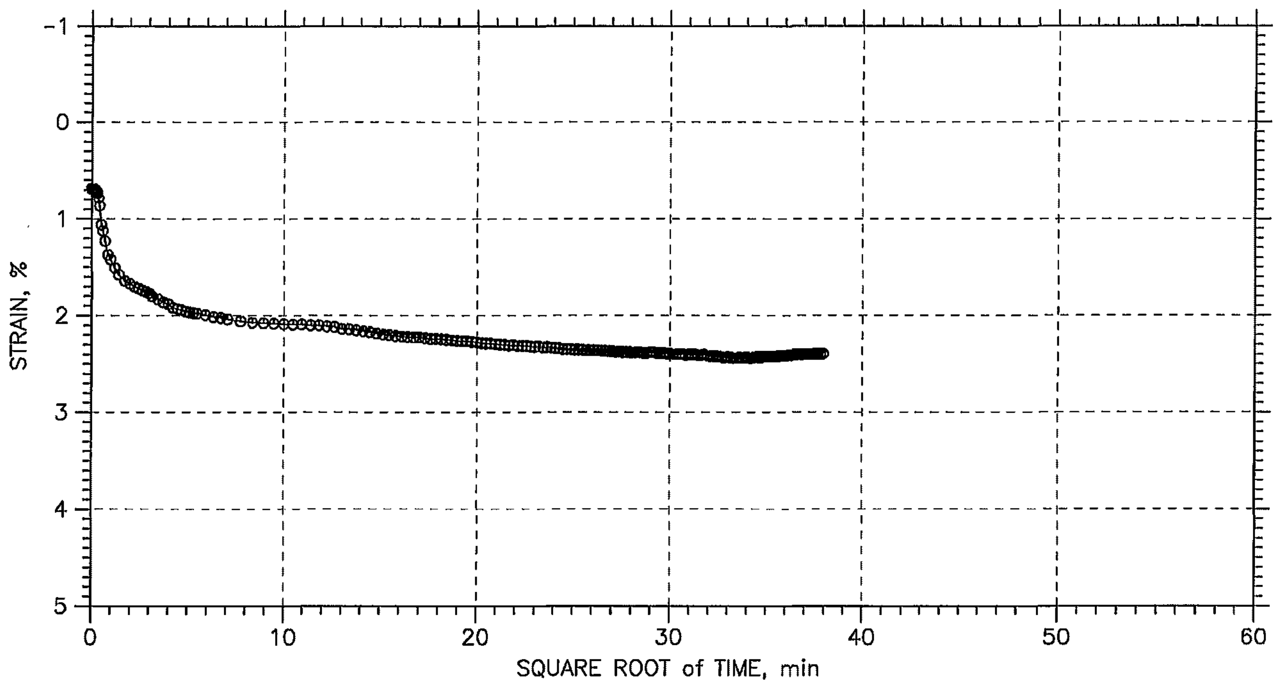
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

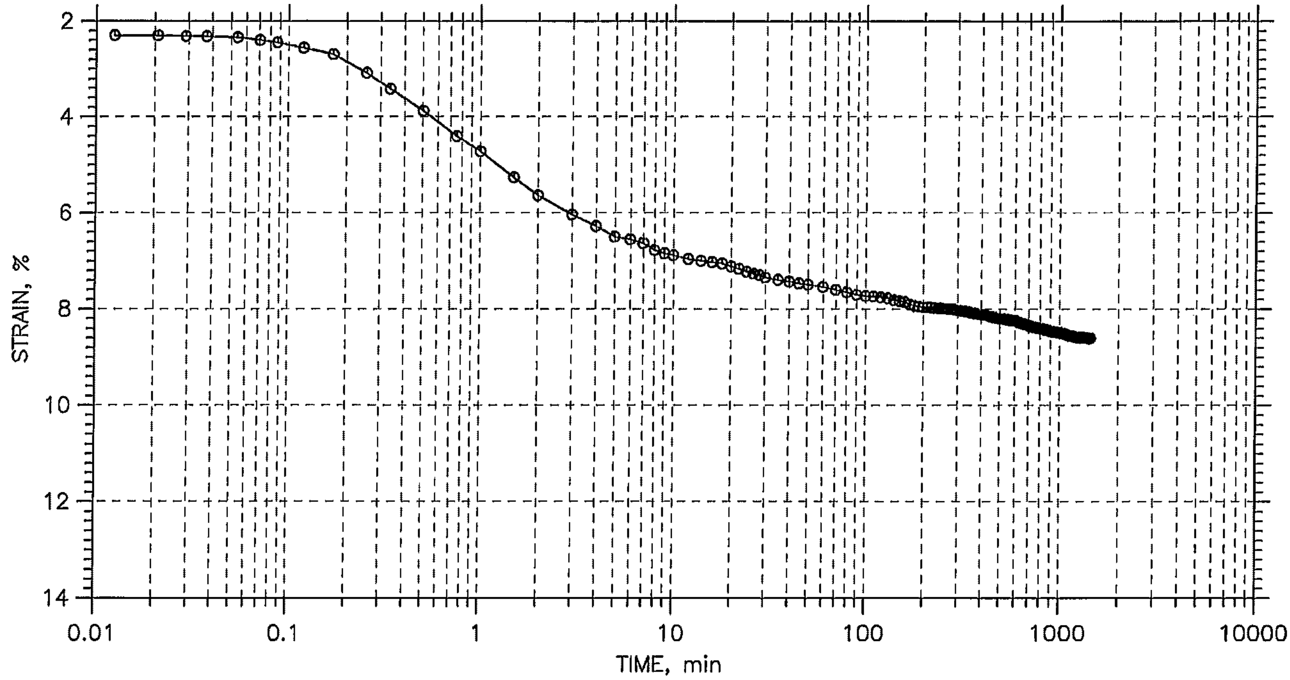
Mon, 06-AUG-2007 09:31:26

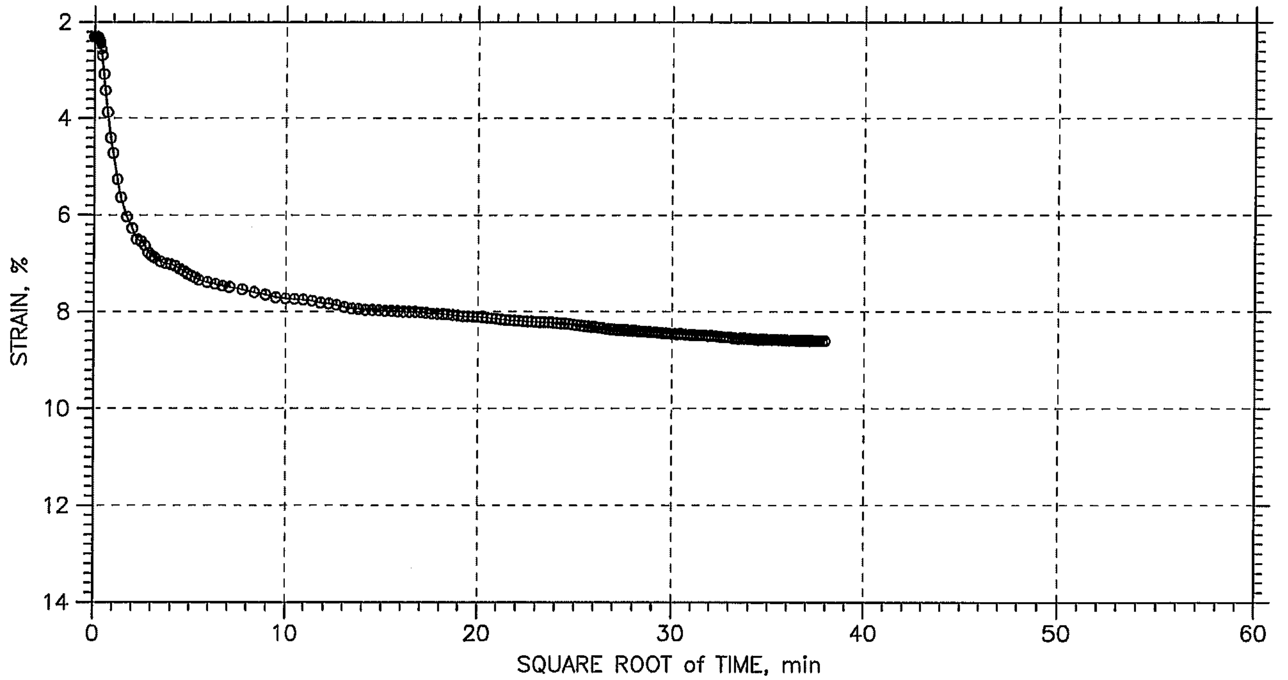
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

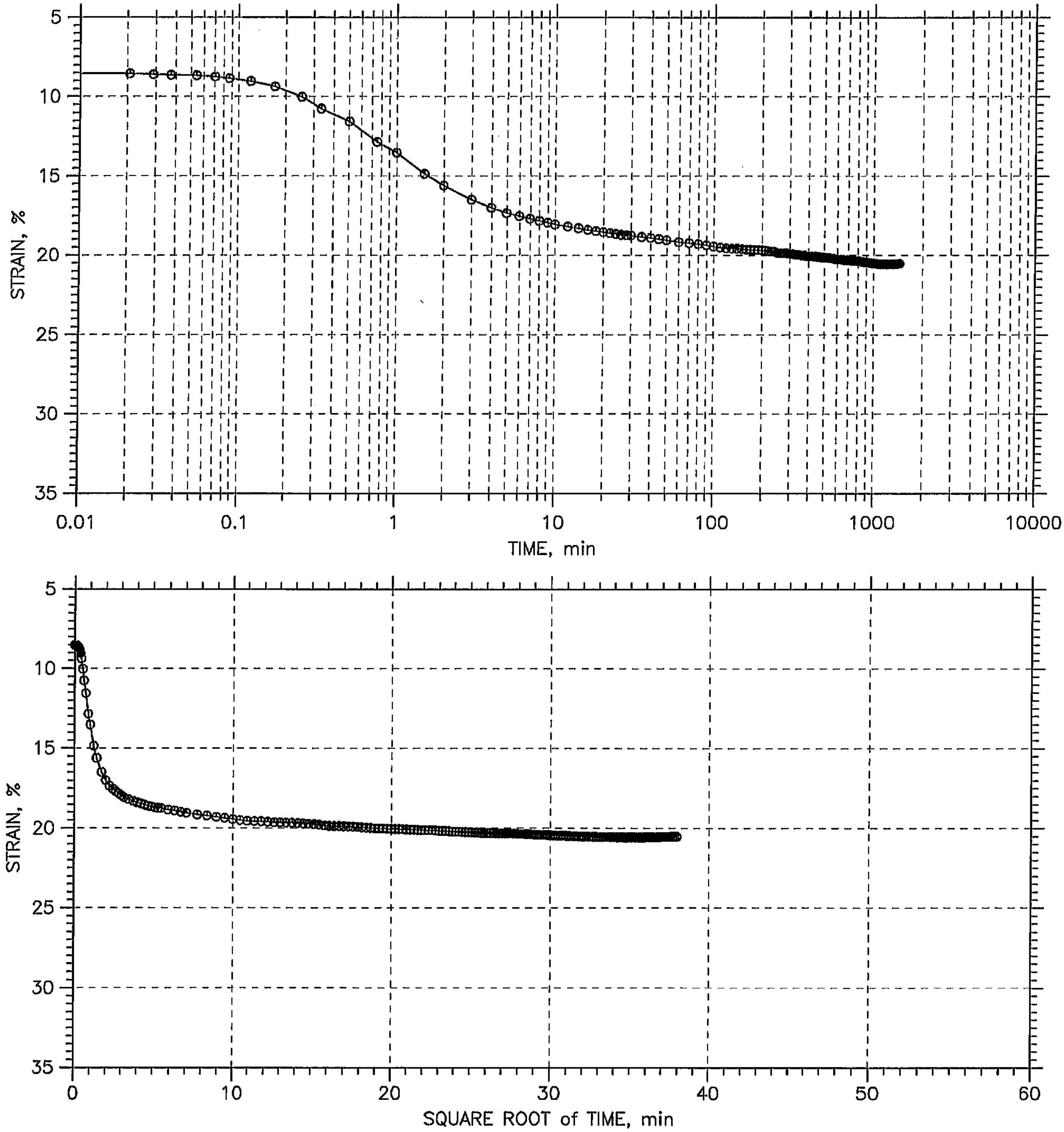
Mon, 06-AUG-2007 09:31:39

CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf



GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

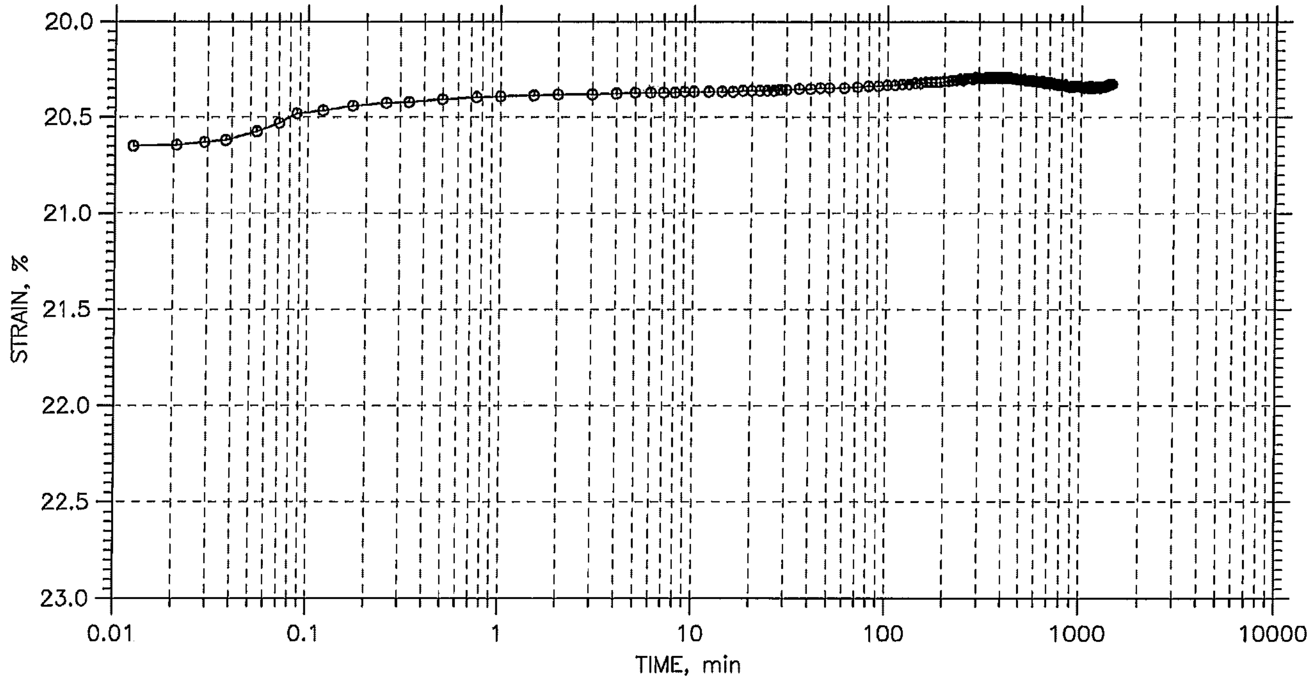
Mon, 06-AUG-2007 09:31:48

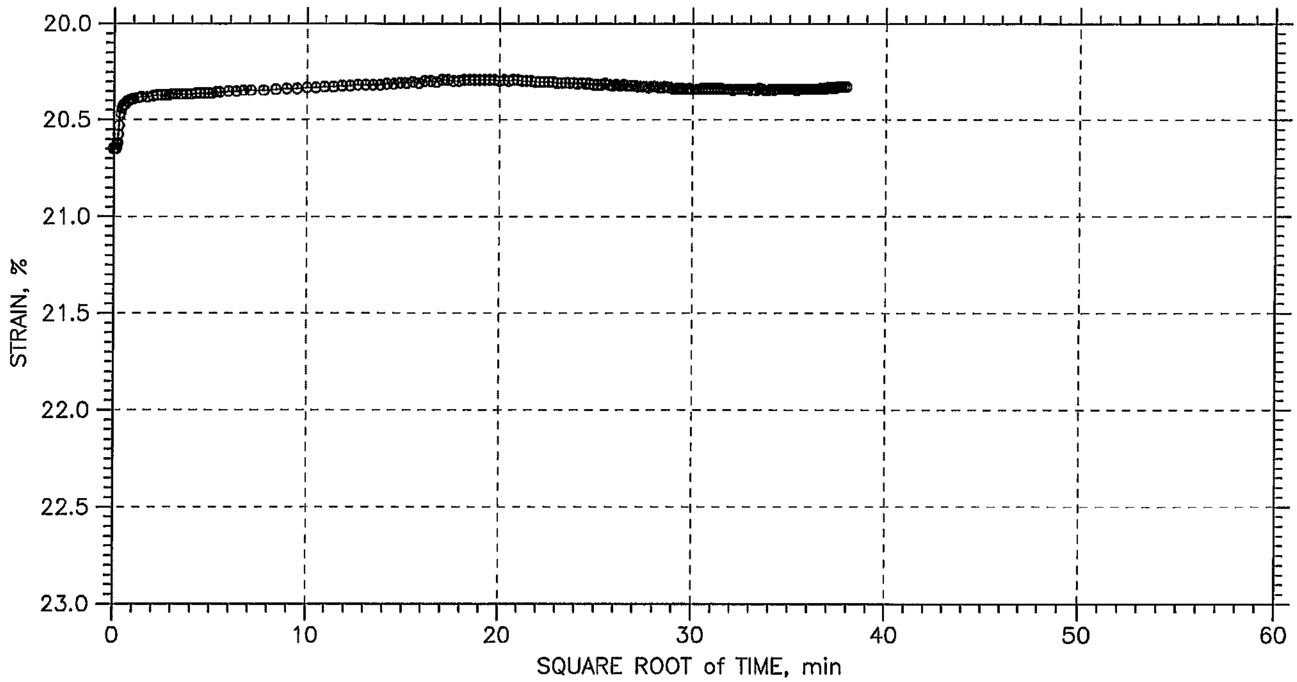
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

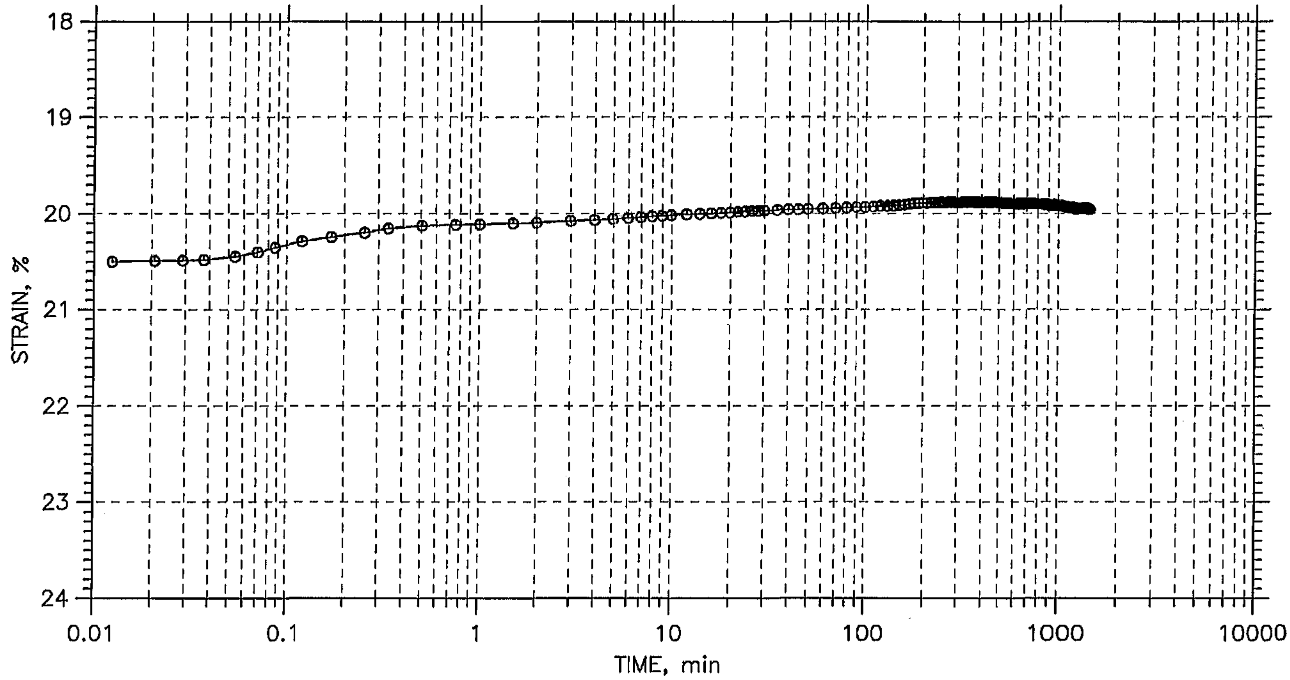
Mon, 06-AUG-2007 09:32:17

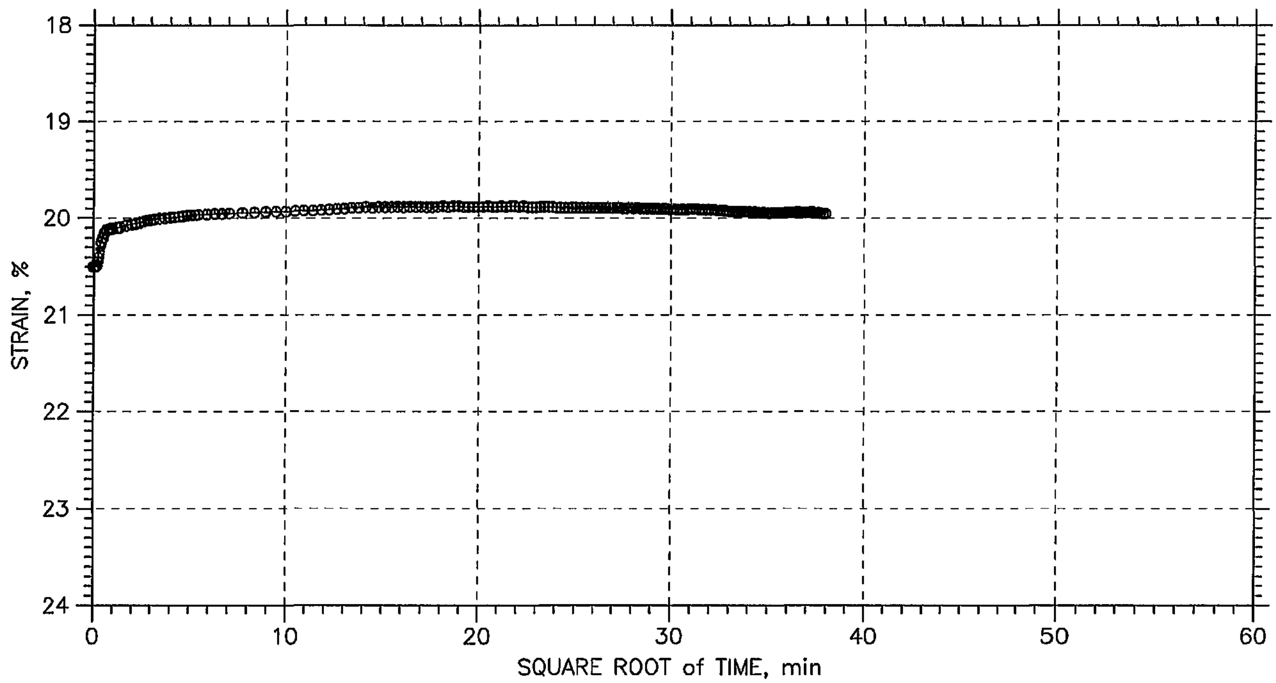
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

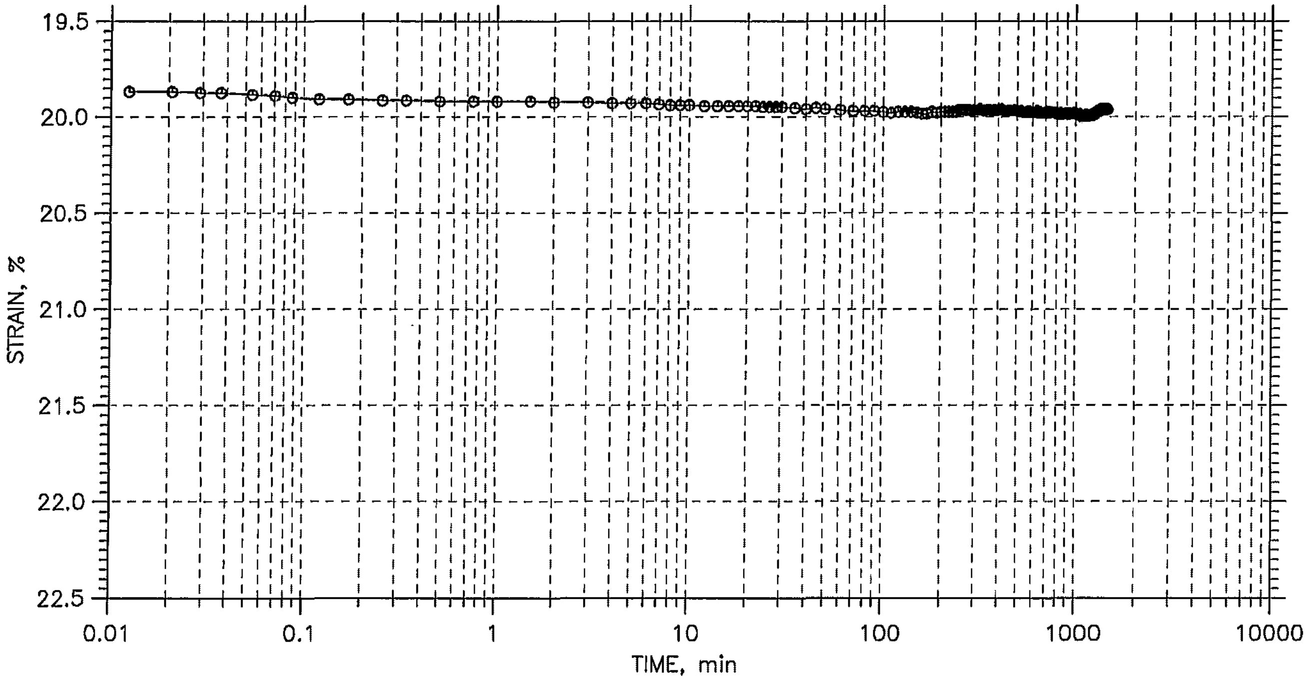
Mon, 06-AUG-2007 09:32:41

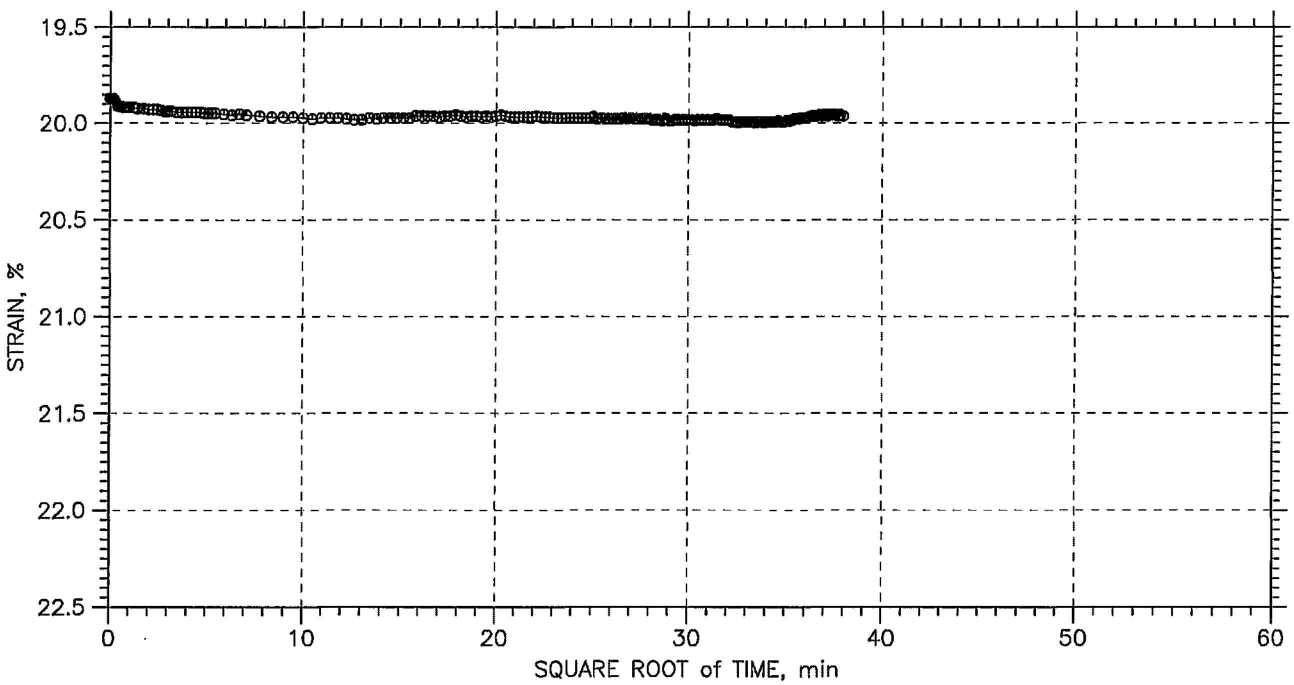
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

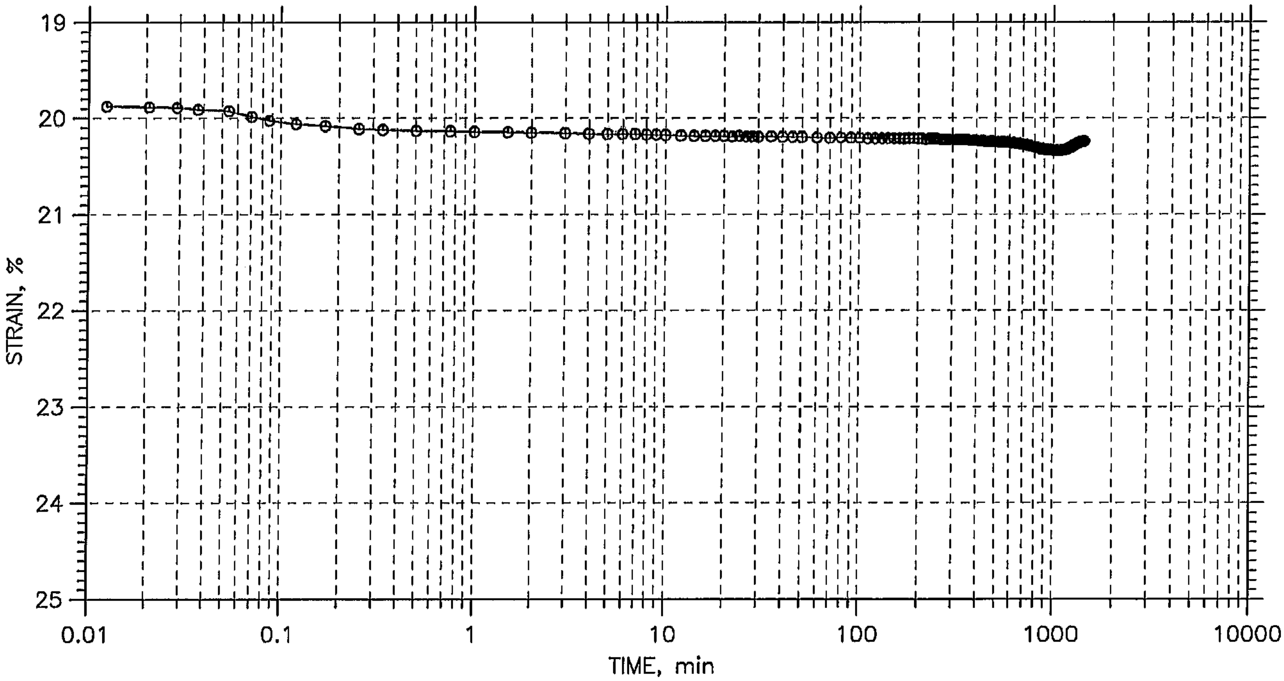
Mon, 06-AUG-2007 09:34:06

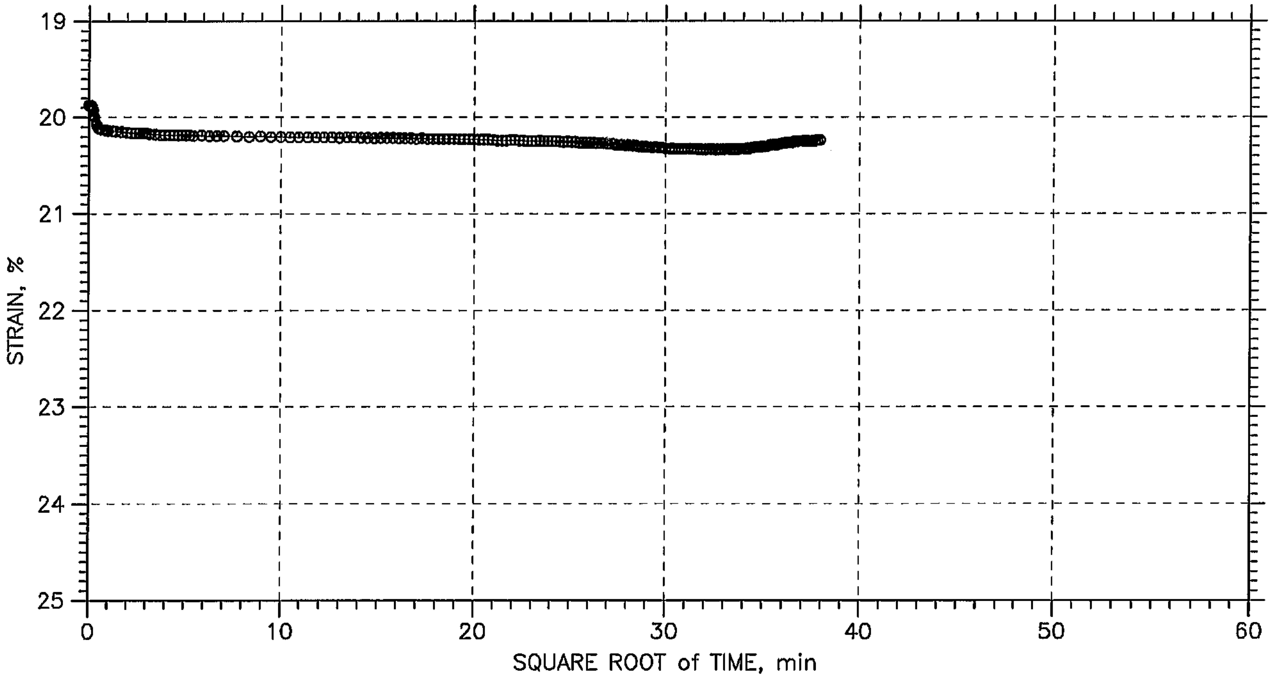
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

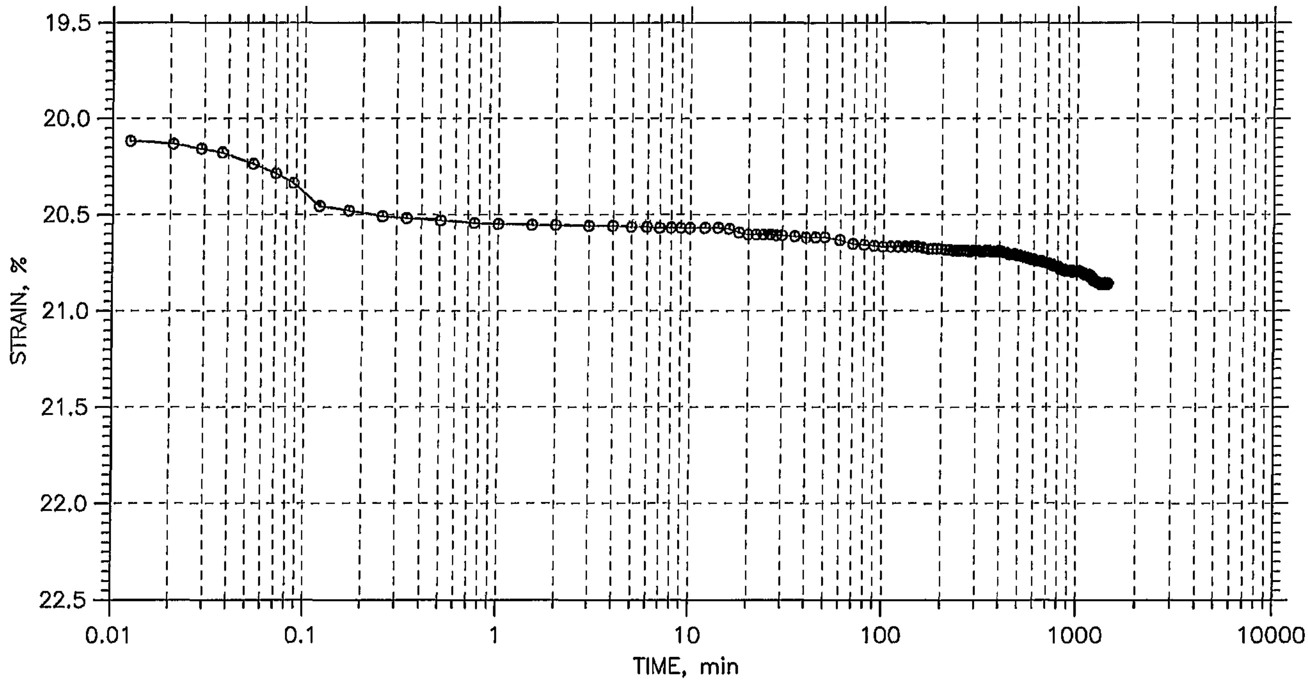
Mon, 06-AUG-2007 09:34:24

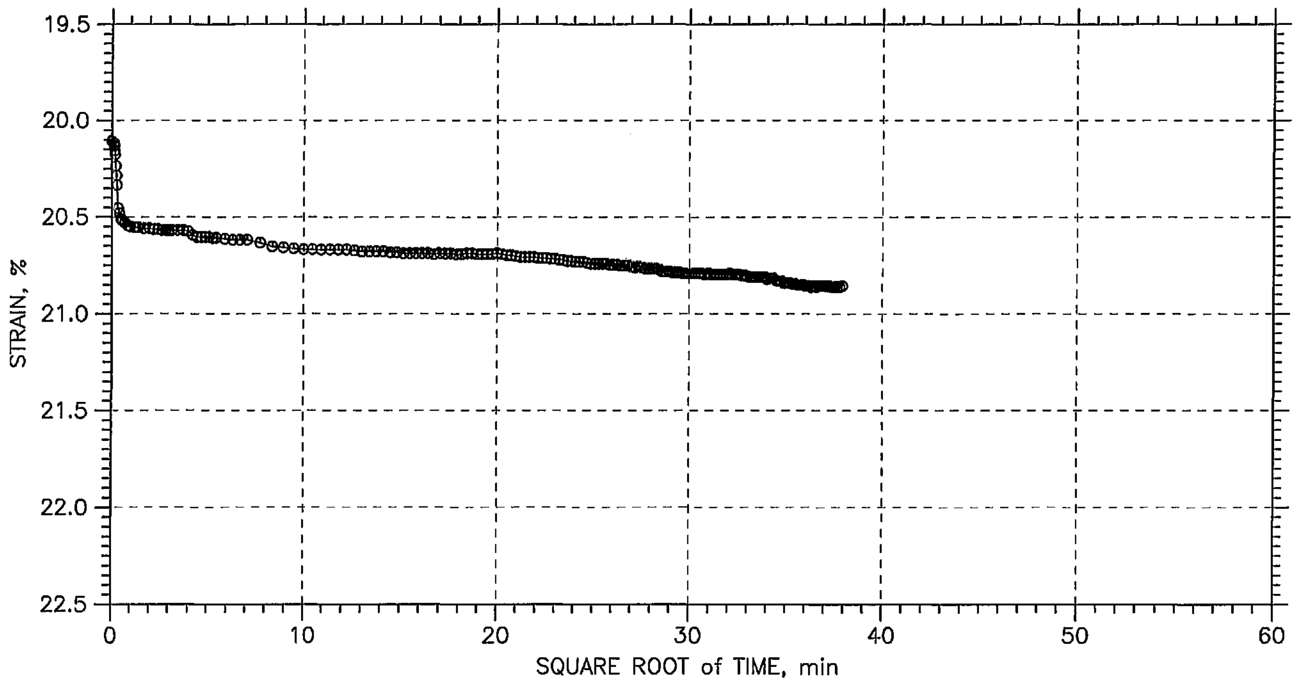
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

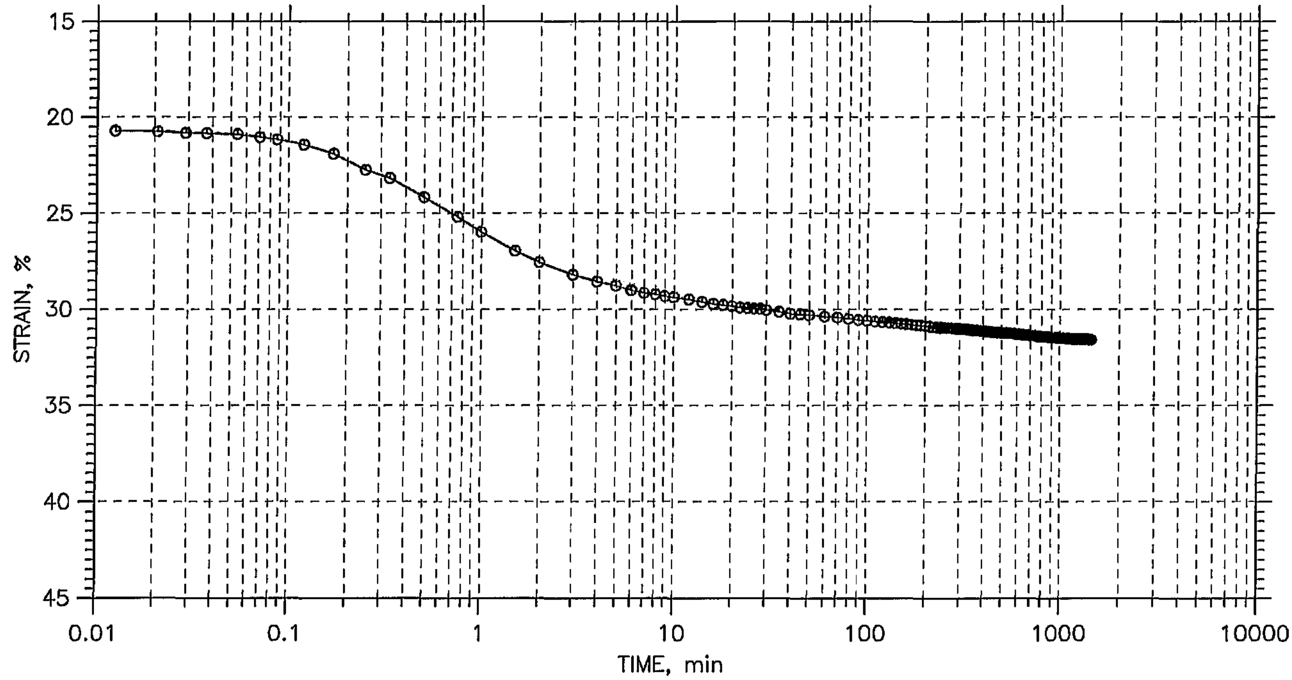
Mon, 06-AUG-2007 09:34:42

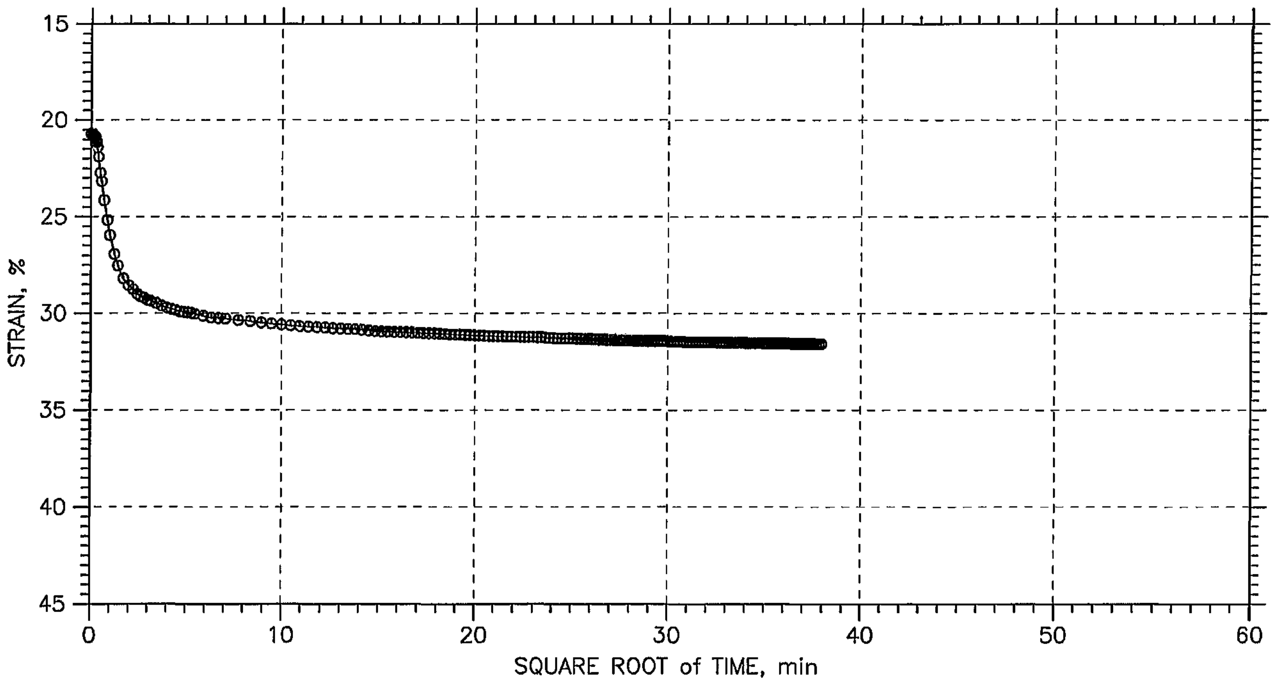
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

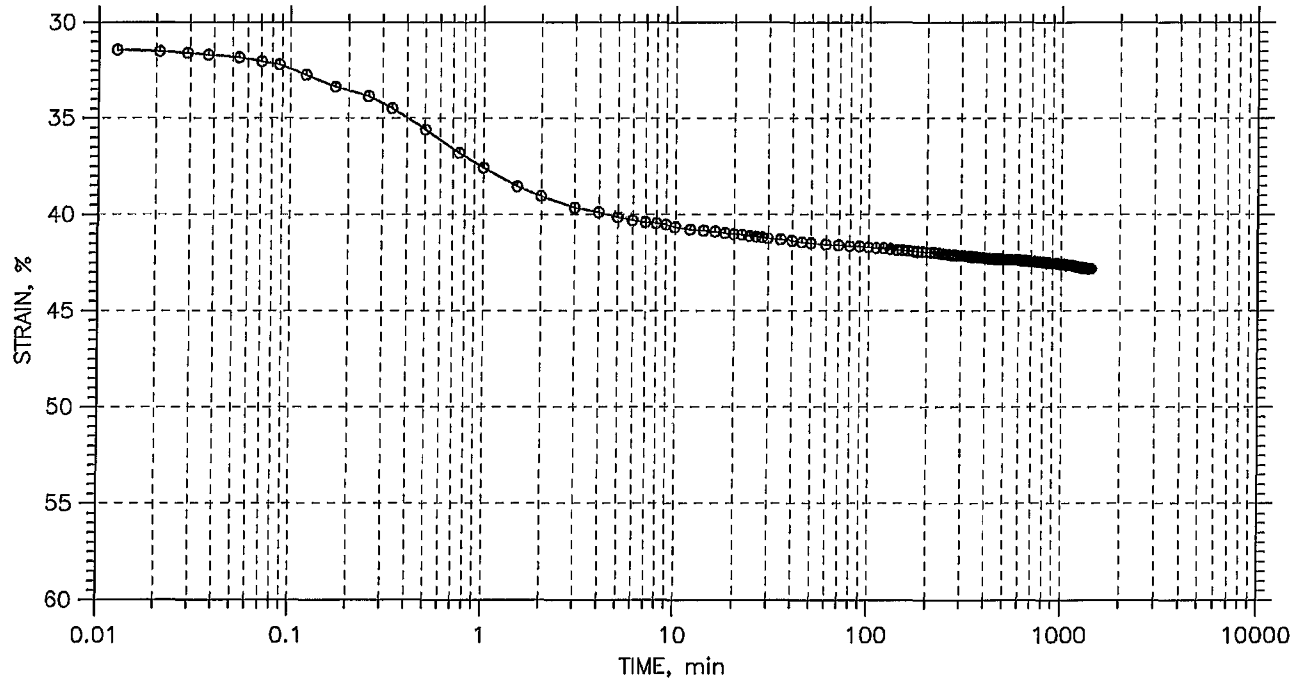
Mon, 06-AUG-2007 09:34:49

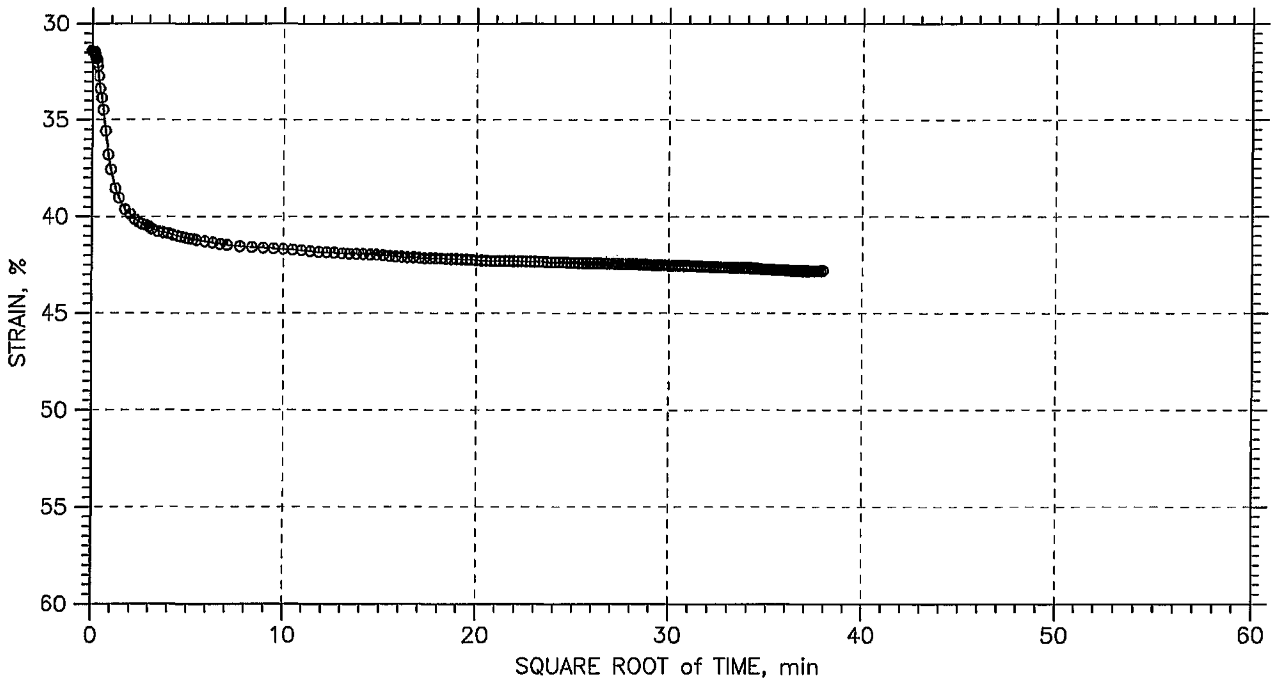
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

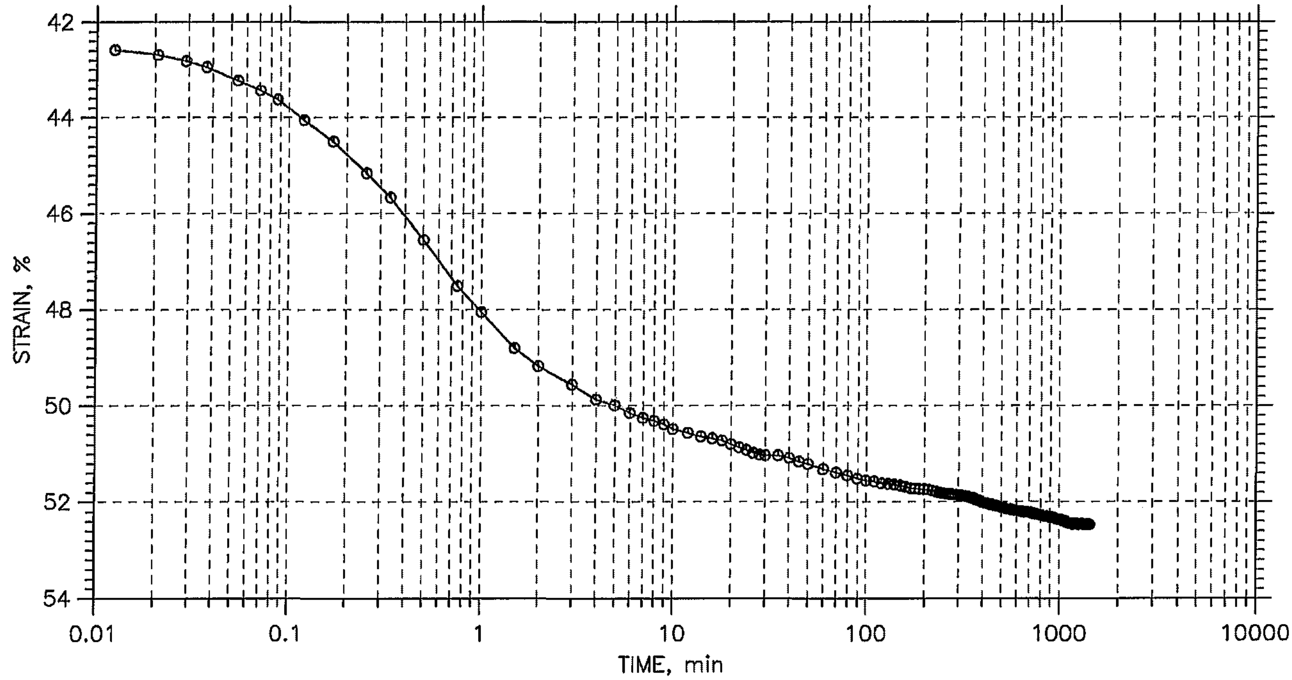
Mon, 06-AUG-2007 09:35:00

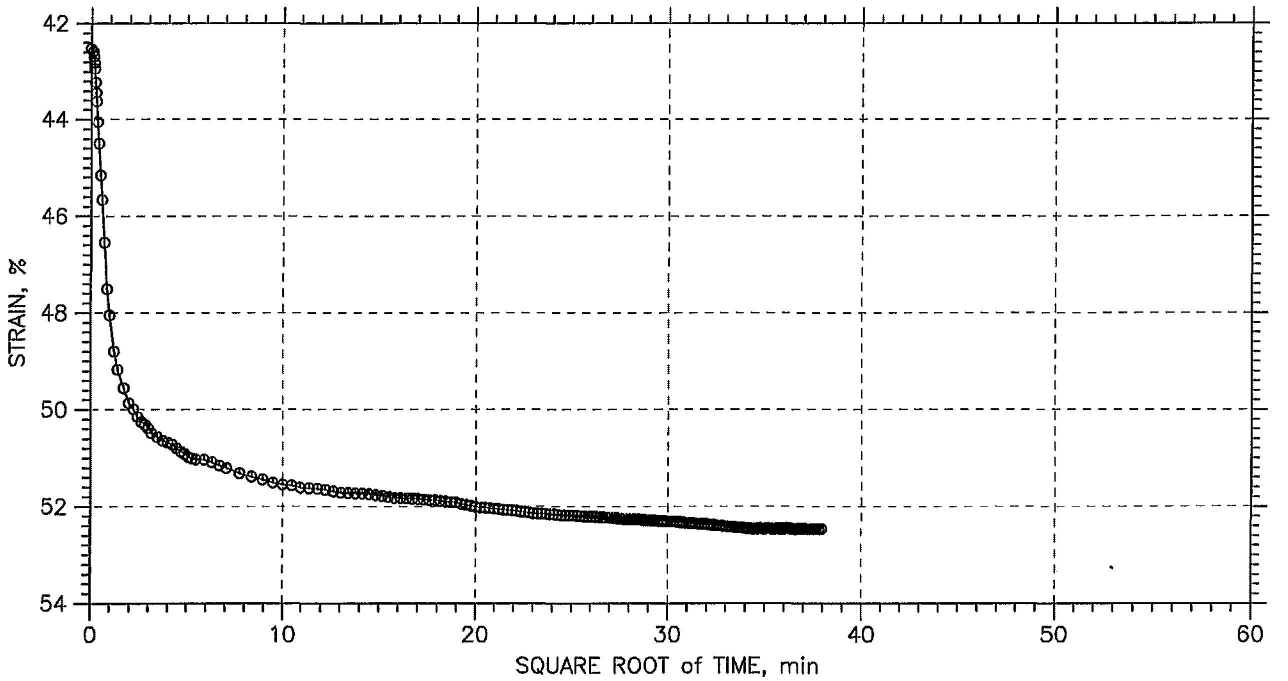
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

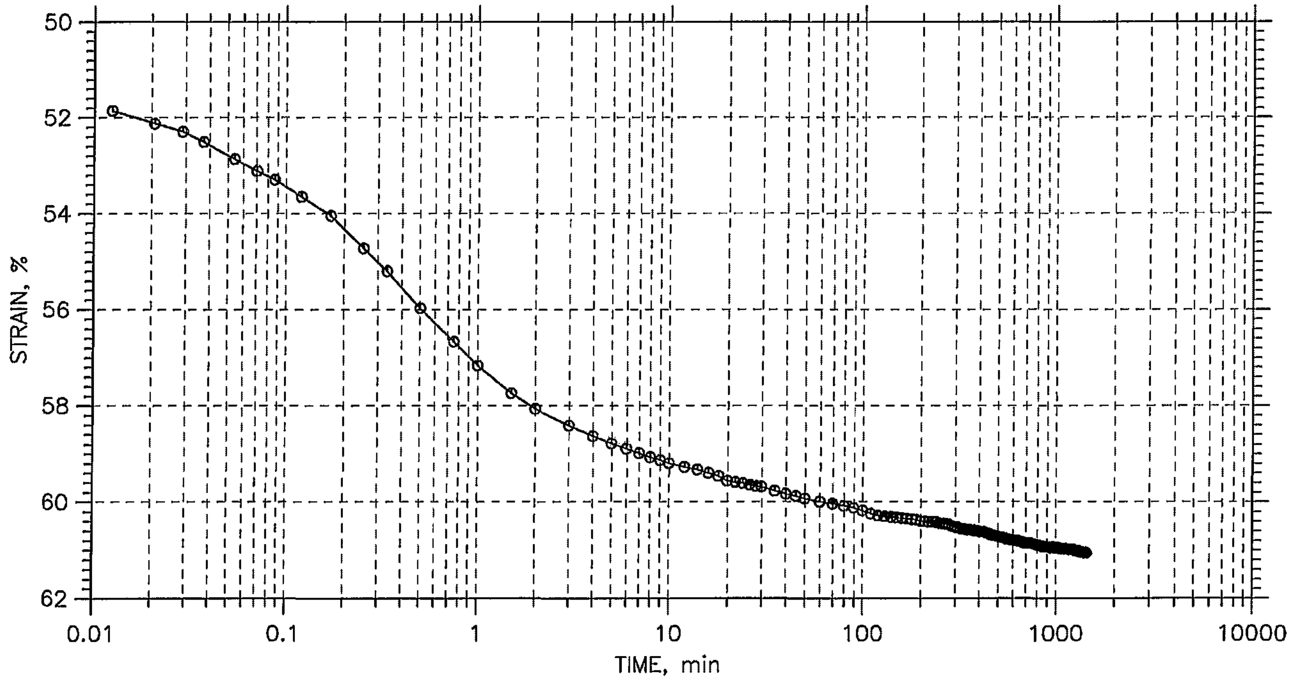
Mon, 06-AUG-2007 09:35:09

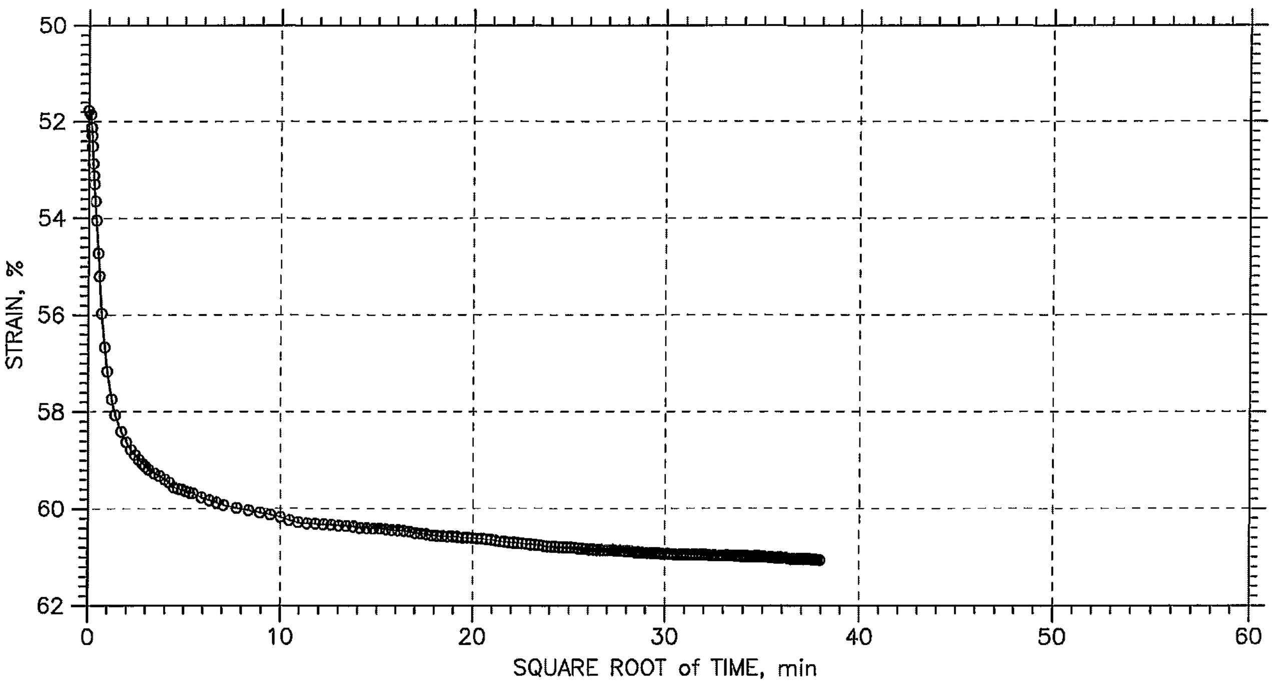
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

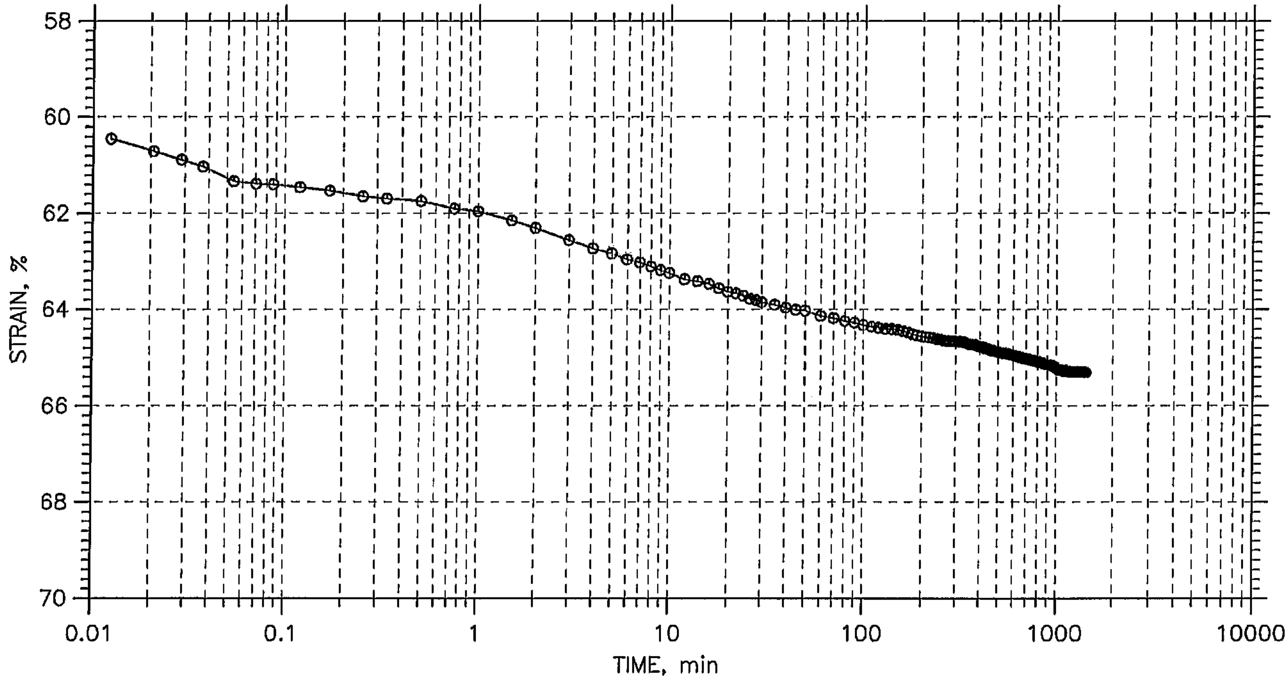
Mon, 06-AUG-2007 09:35:19

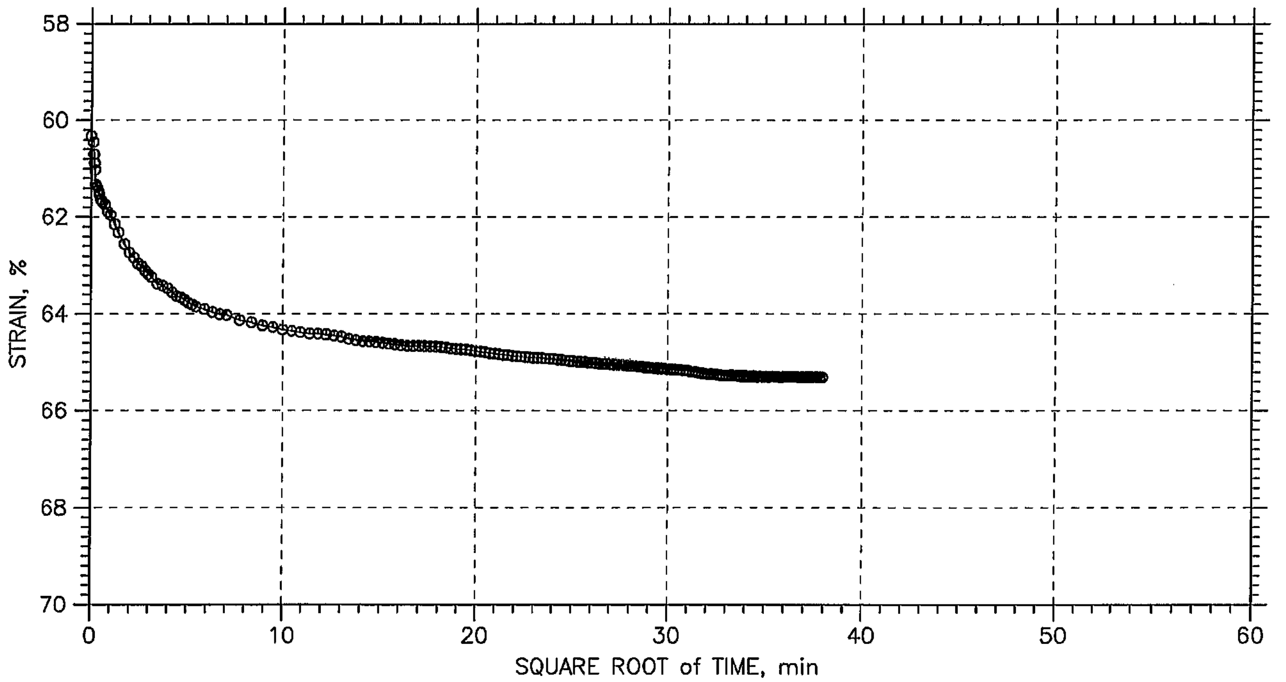
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

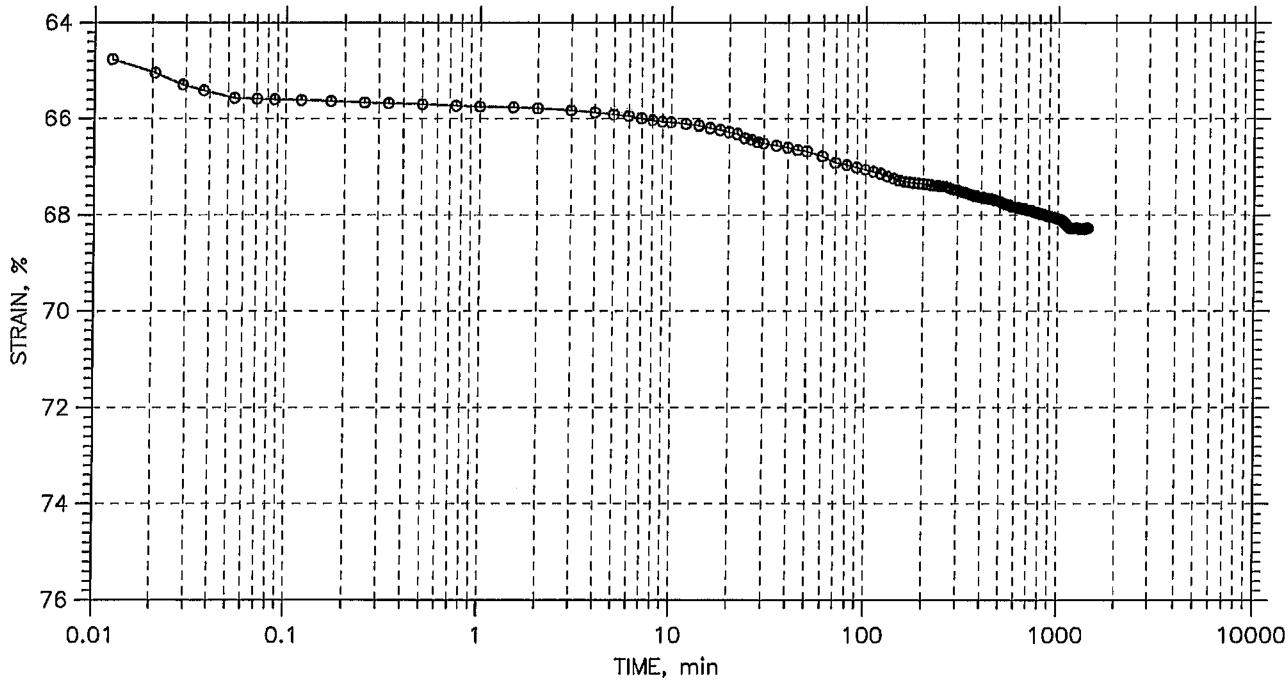
Mon, 06-AUG-2007 09:35:44

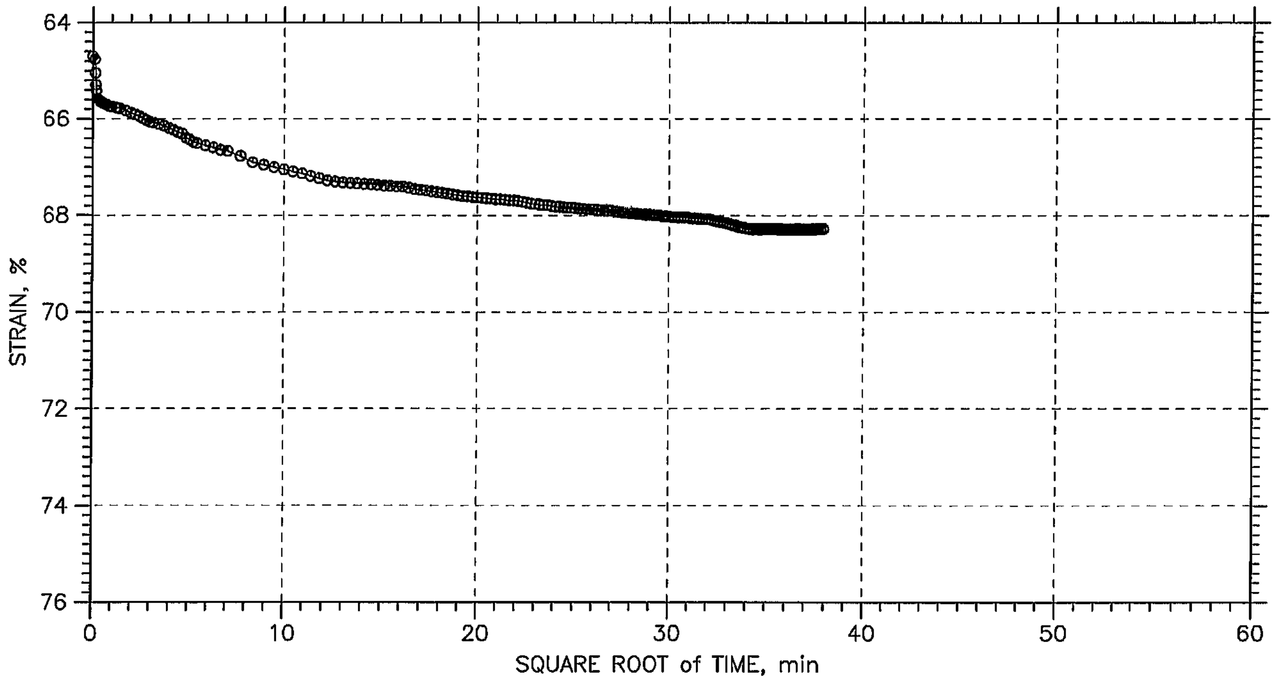
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

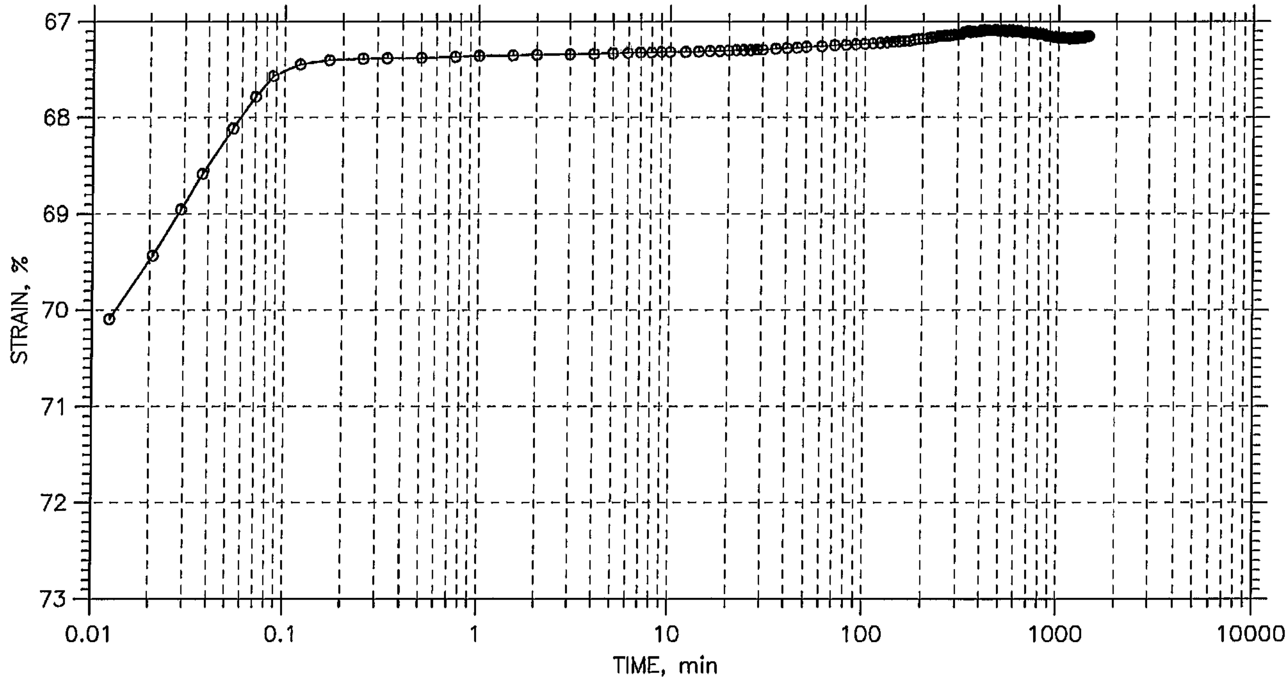
Mon, 06-AUG-2007 09:36:03

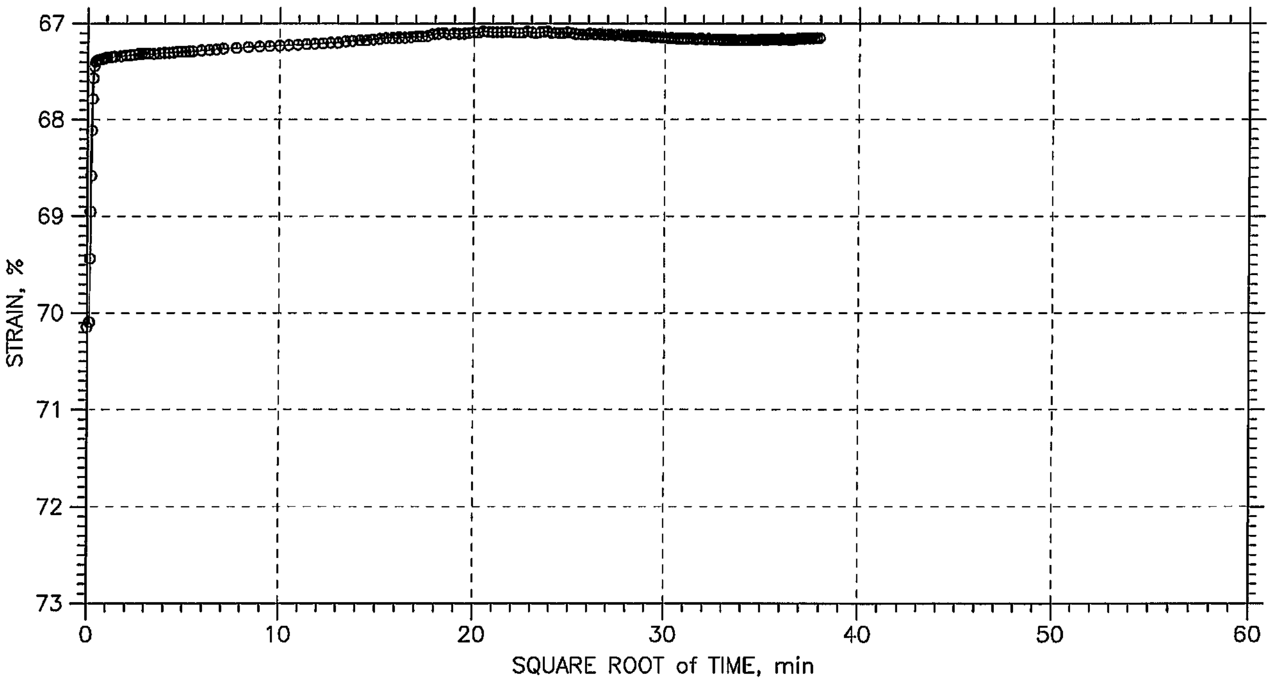
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

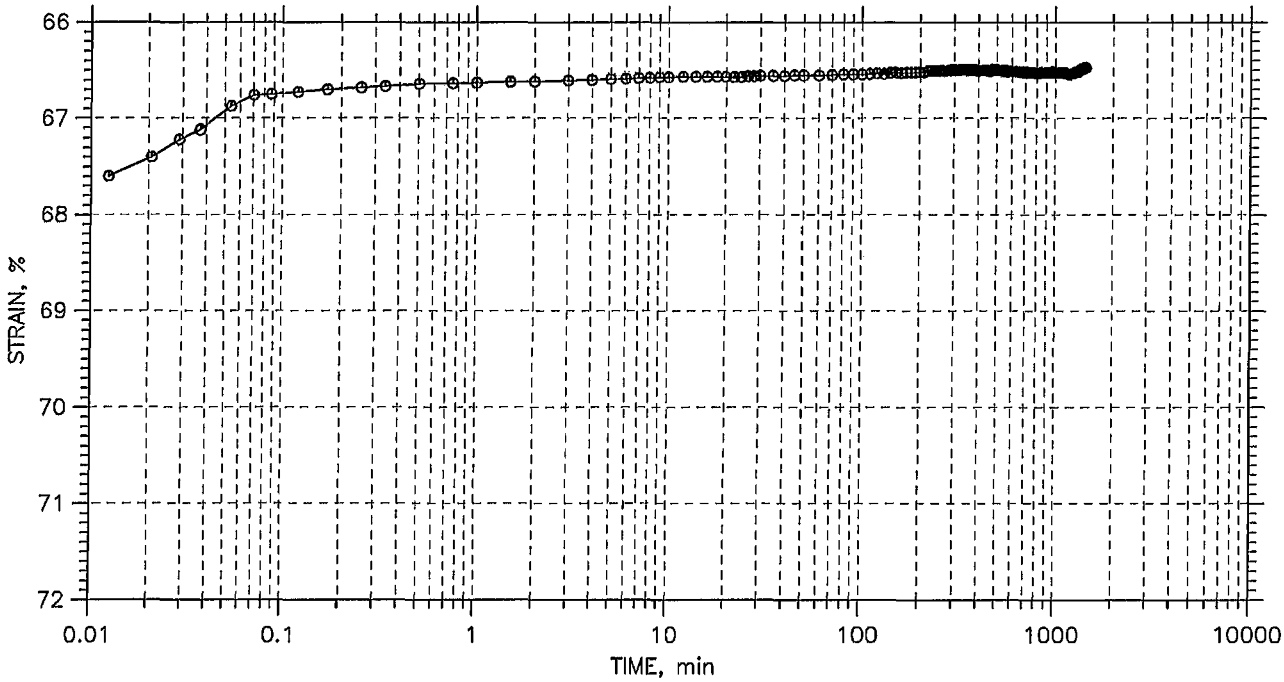
Mon, 06-AUG-2007 09:36:34

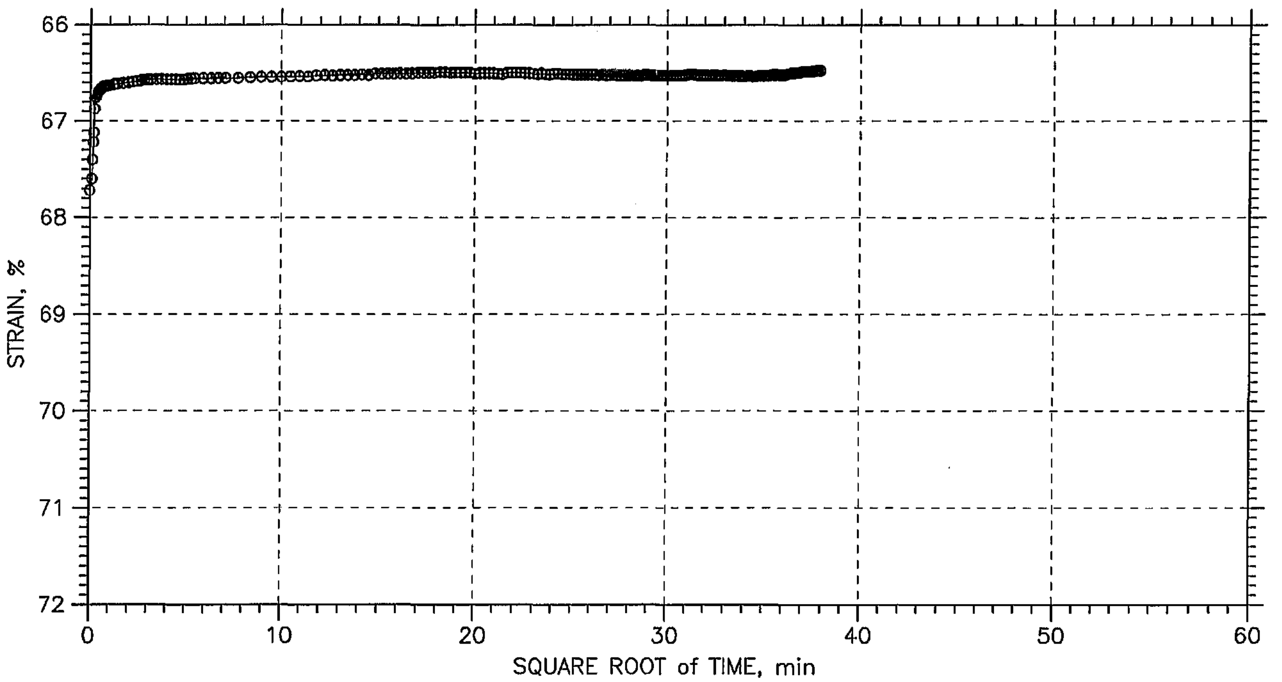
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

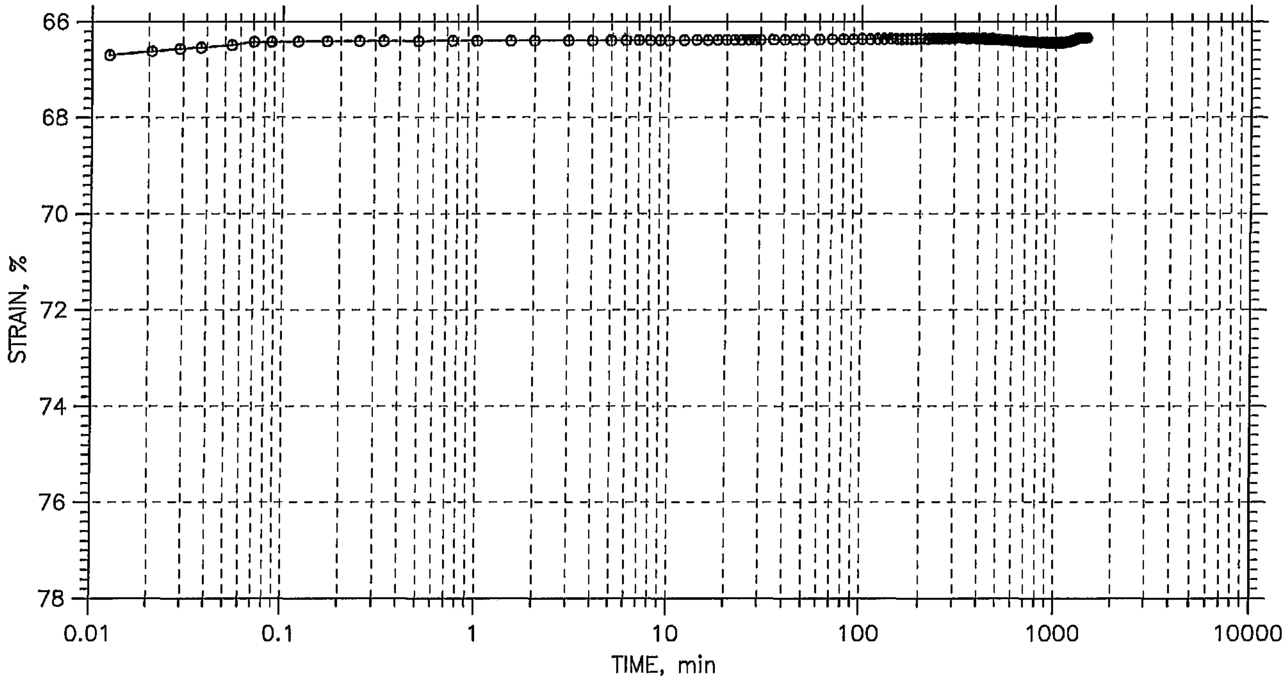
Mon, 06-AUG-2007 09:36:57

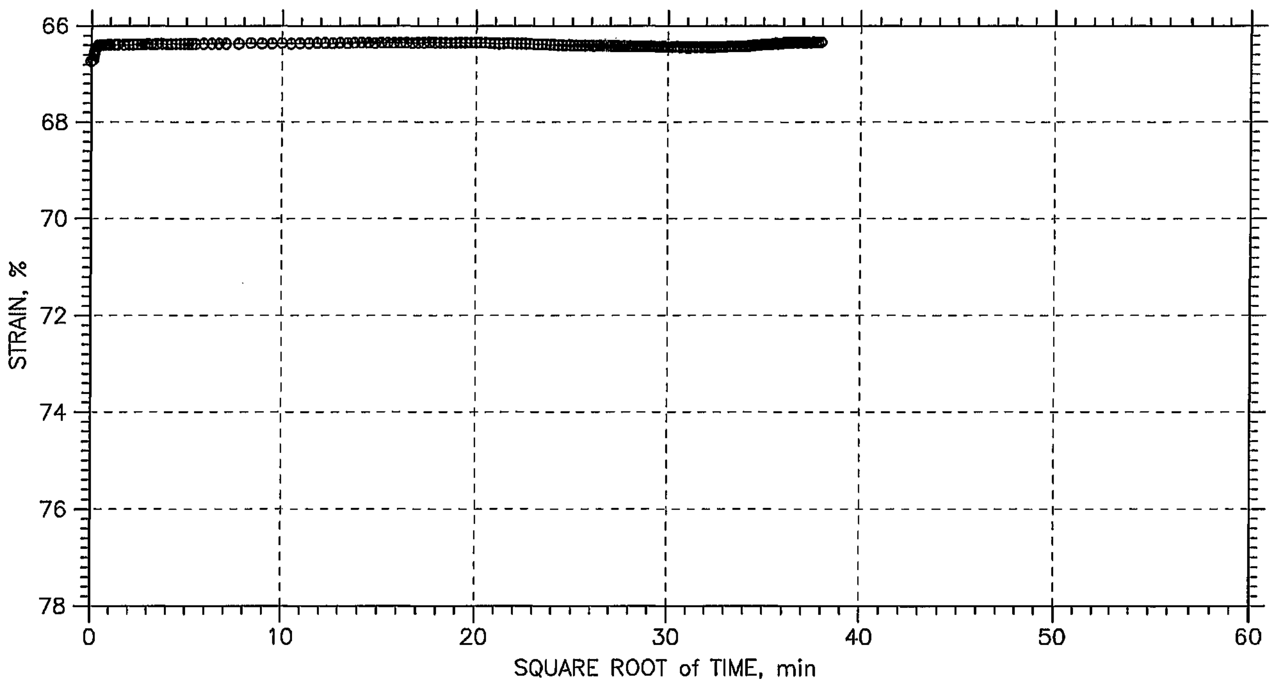
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf



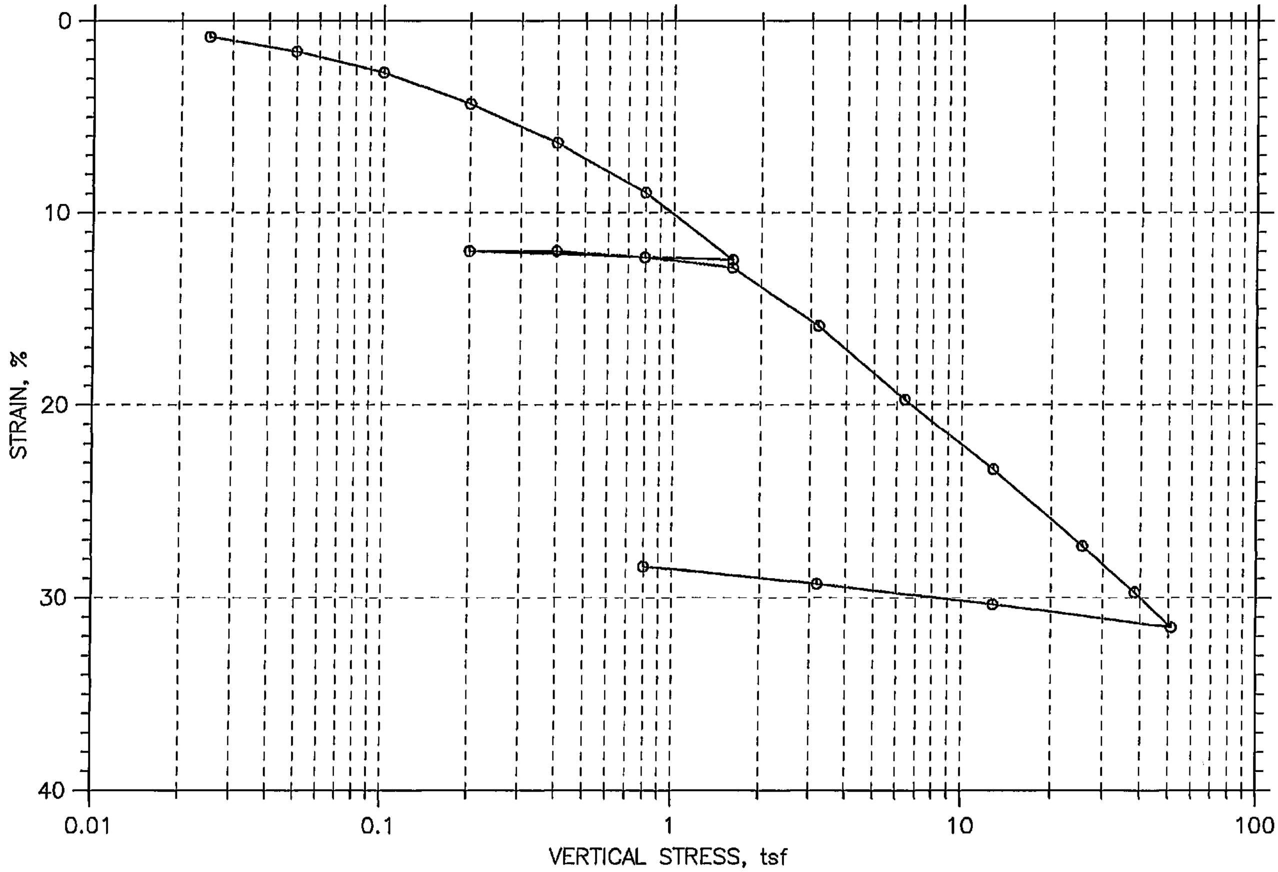


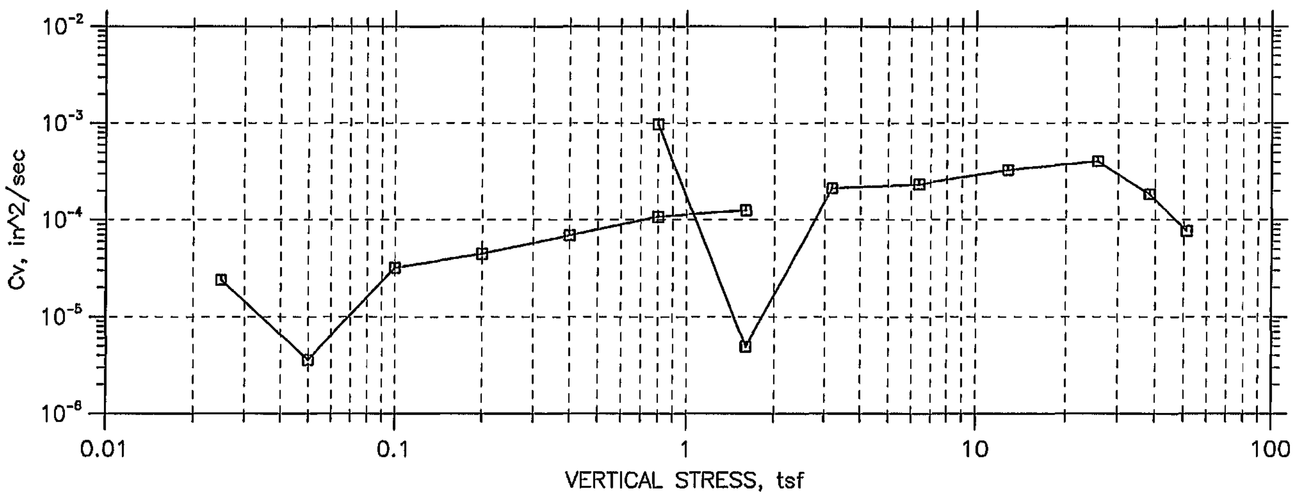
GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20038	Tested By: md	Checked By: jdt
	Sample No.: 0318-01	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-36	Sample Type: tube	Elevation: ---
	Description: Moist, white silt		
	Remarks: System Q		

Mon, 06-AUG-2007 09:55:37

CONSOLIDATION TEST DATA

SUMMARY REPORT



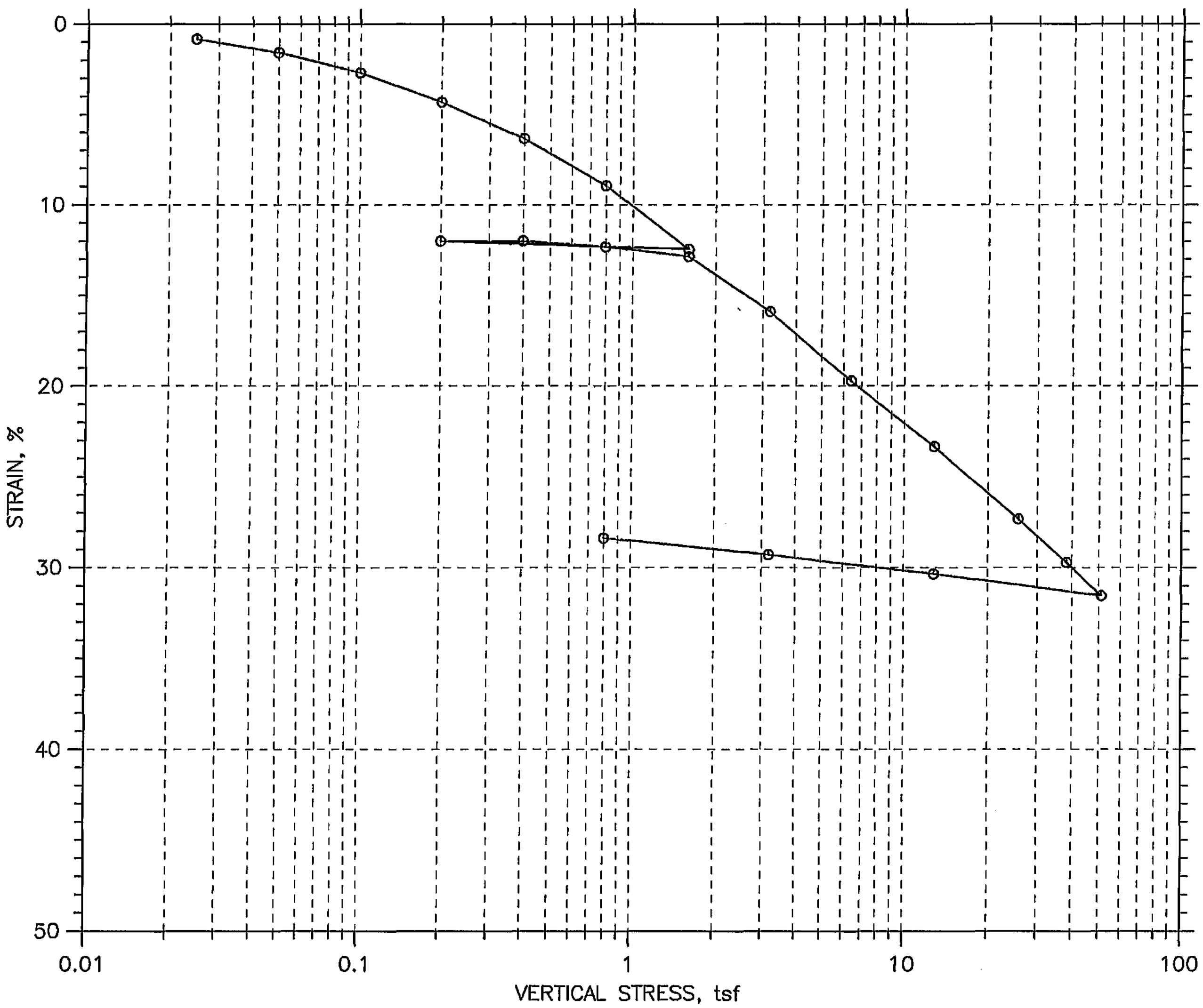


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

Mon, 27-AUG-2007 12:12:47

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	50.14	25.33
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	71.38	99.65
Compression Index: ---				Saturation, %	99.99	99.98
Diameter: 2.5 in		Height: 1 in		Void Ratio	1.34	0.68
LL: 57	PL: 33	PI: 24	GS: 2.68			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

Mon, 27-AUG-2007 12:12:49

CONSOLIDATION TEST DATA

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 20052	Tested By: md	Checked By: jdt
Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
Test No.: C-39	Sample Type: tube	Elevation: ---

Soil Description: Moist, dark greenish gray silt
Remarks: System Q

Measured Specific Gravity: 2.68	Liquid Limit: 57	Initial Height: 1.00 in
Initial Void Ratio: 1.34	Plastic Limit: 33	Specimen Diameter: 2.50 in
Final Void Ratio: 0.68	Plasticity Index: 24	

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	SC-9-5	RING		ment
Wt. Container + Wet Soil, gm	182.08	354.5	331.68	114.7
Wt. Container + Dry Soil, gm	123.06	308.38	308.38	93.18
Wt. Container, gm	8.5	216.41	216.41	8.23
Wt. Dry Soil, gm	114.56	91.971	91.971	84.95
Water Content, %	51.52	50.14	25.33	25.33
Void Ratio	---	1.34	0.68	---
Degree of Saturation, %	---	99.99	99.98	---
Dry Unit Weight, pcf	---	71.377	99.646	---

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20052
Sample No.: 0318-09
Test No.: C-39

Location: Syracuse, NY
Tested By: md
Test Date: 07/30/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 24-26 ft
Elevation: ---

Soil Description: Moist, dark greenish gray silt
Remarks: System Q

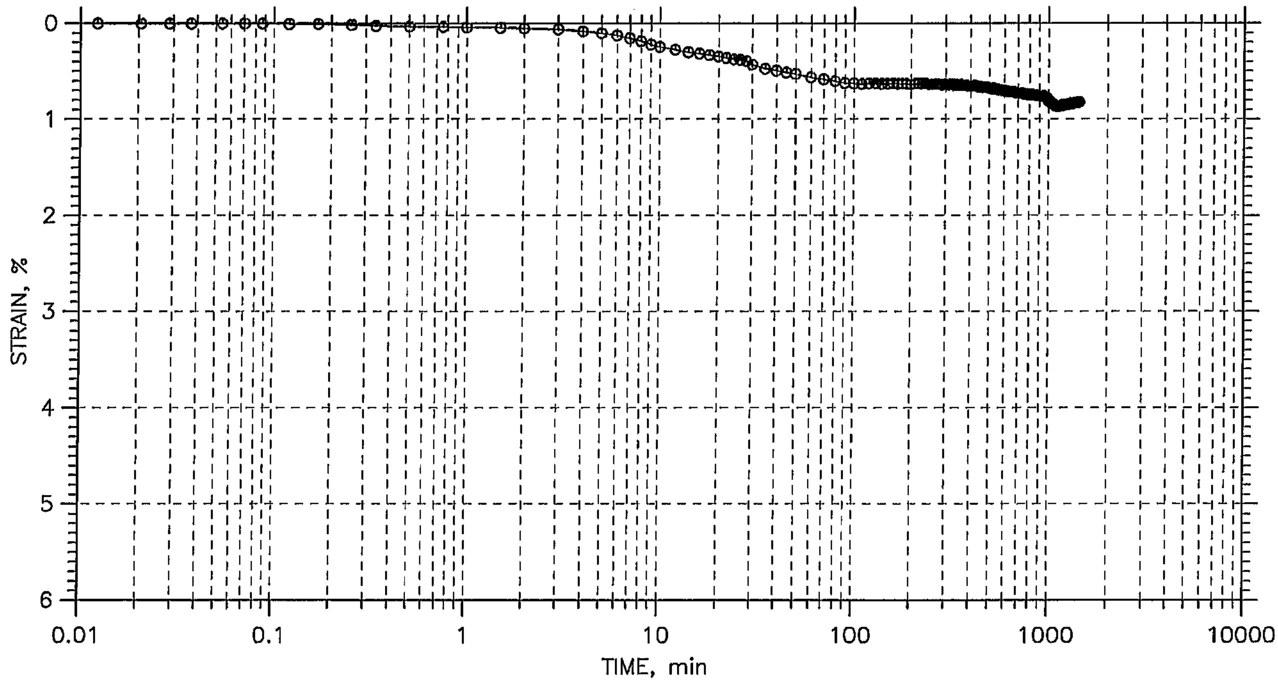
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.025	0.008263	1.325	0.83	33.9	0.0	2.41e-005	0.00e+000	2.41e-005
2	0.05	0.01579	1.307	1.58	223.3	0.0	3.59e-006	0.00e+000	3.59e-006
3	0.1	0.02678	1.281	2.68	24.4	0.0	3.22e-005	0.00e+000	3.22e-005
4	0.2	0.04304	1.243	4.30	17.1	0.0	4.47e-005	0.00e+000	4.47e-005
5	0.4	0.06337	1.195	6.34	10.6	0.0	6.93e-005	0.00e+000	6.93e-005
6	0.8	0.08937	1.135	8.94	6.5	0.0	1.08e-004	0.00e+000	1.08e-004
7	1.6	0.1245	1.052	12.45	5.2	0.0	1.26e-004	0.00e+000	1.26e-004
8	0.8	0.1231	1.055	12.31	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
9	0.2	0.12	1.063	12.00	1.2	0.0	5.29e-004	0.00e+000	5.29e-004
10	0.4	0.12	1.063	12.00	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
11	0.8	0.1232	1.055	12.32	0.6	0.0	9.77e-004	0.00e+000	9.77e-004
12	1.6	0.1285	1.043	12.85	127.4	0.0	4.93e-006	0.00e+000	4.93e-006
13	3.2	0.1589	0.972	15.89	2.8	0.0	2.13e-004	0.00e+000	2.13e-004
14	6.4	0.197	0.882	19.70	2.1	2.7	2.66e-004	2.09e-004	2.34e-004
15	12.8	0.2333	0.797	23.33	1.5	0.0	3.28e-004	0.00e+000	3.28e-004
16	25.6	0.2732	0.704	27.32	1.1	0.0	4.03e-004	0.00e+000	4.03e-004
17	38.4	0.2972	0.647	29.72	2.3	0.0	1.84e-004	0.00e+000	1.84e-004
18	51.2	0.3154	0.605	31.54	5.2	0.0	7.66e-005	0.00e+000	7.66e-005
19	12.8	0.3034	0.633	30.34	0.1	0.0	5.06e-003	0.00e+000	5.06e-003
20	3.2	0.2928	0.658	29.28	0.2	0.0	1.93e-003	0.00e+000	1.93e-003
21	0.8	0.2837	0.679	28.37	1.4	0.0	2.95e-004	0.00e+000	2.95e-004

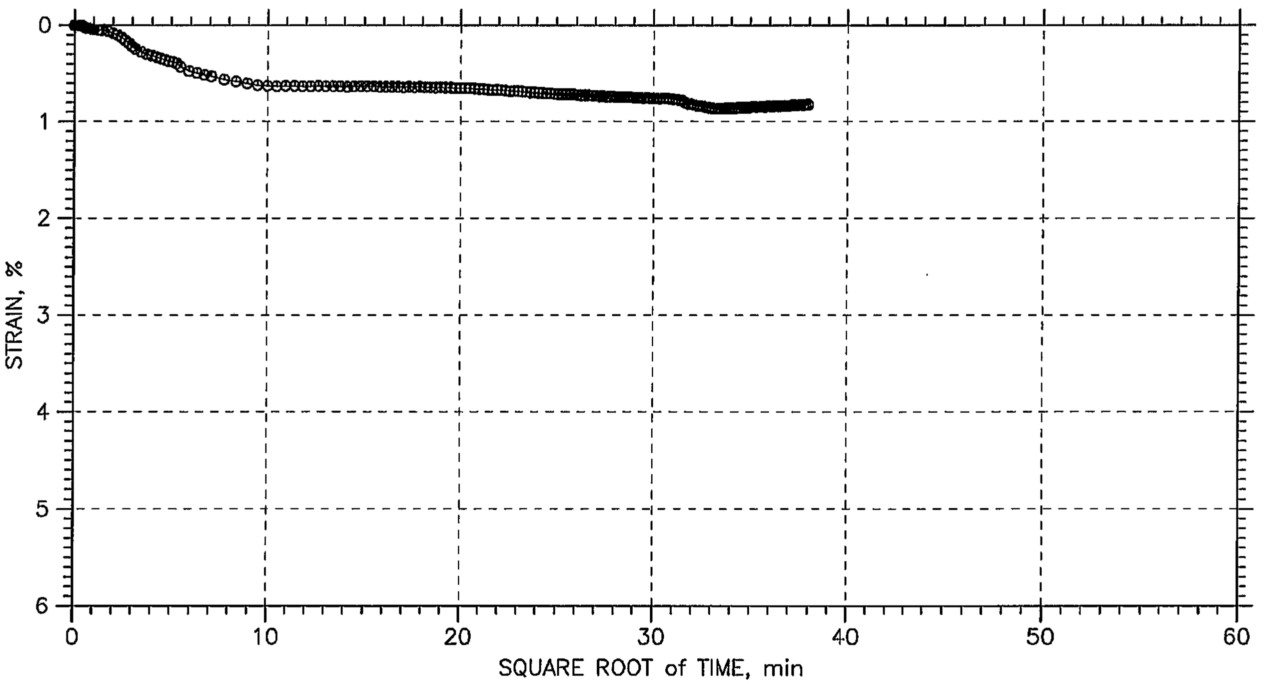
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

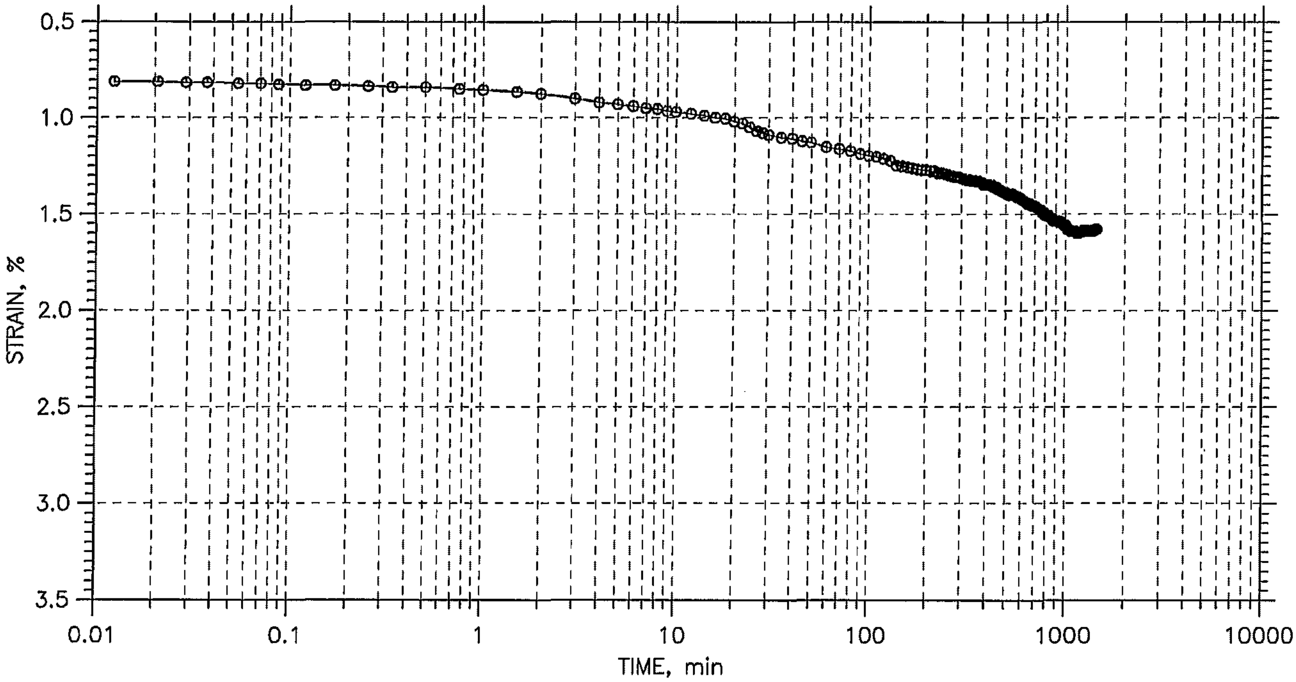
Mon, 27-AUG-2007 12:13:28

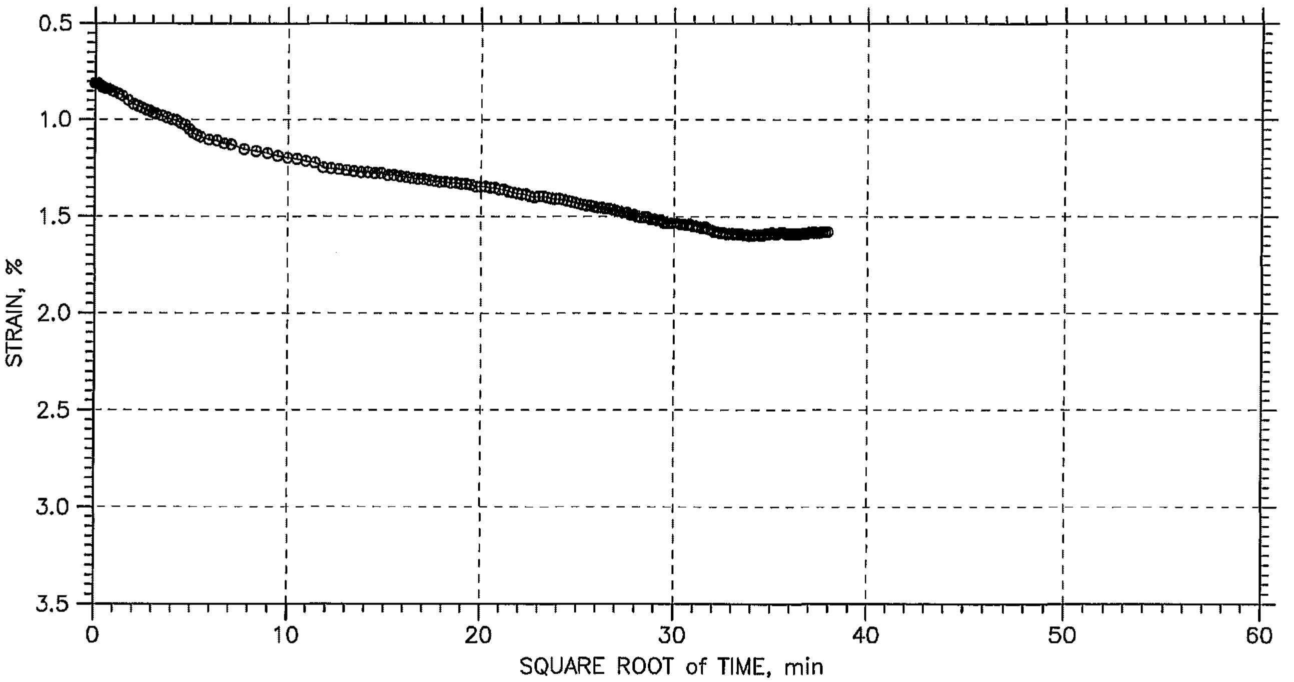
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

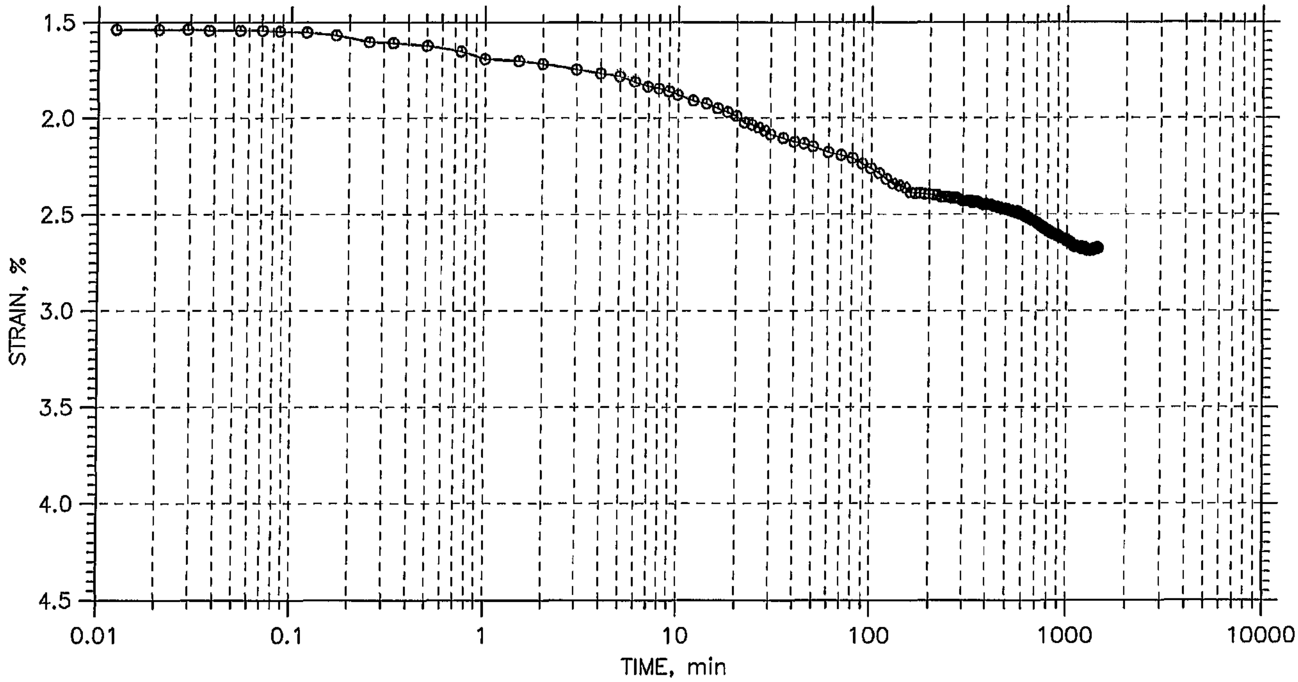
Mon, 27-AUG-2007 12:13:38

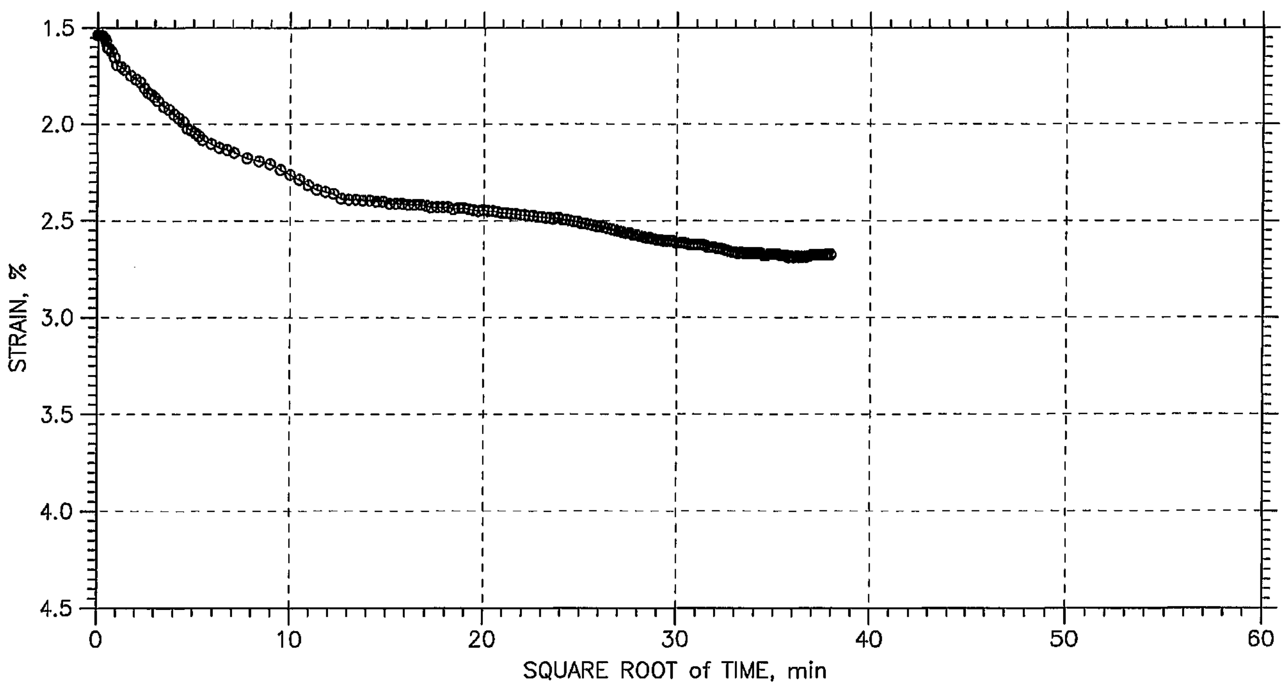
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

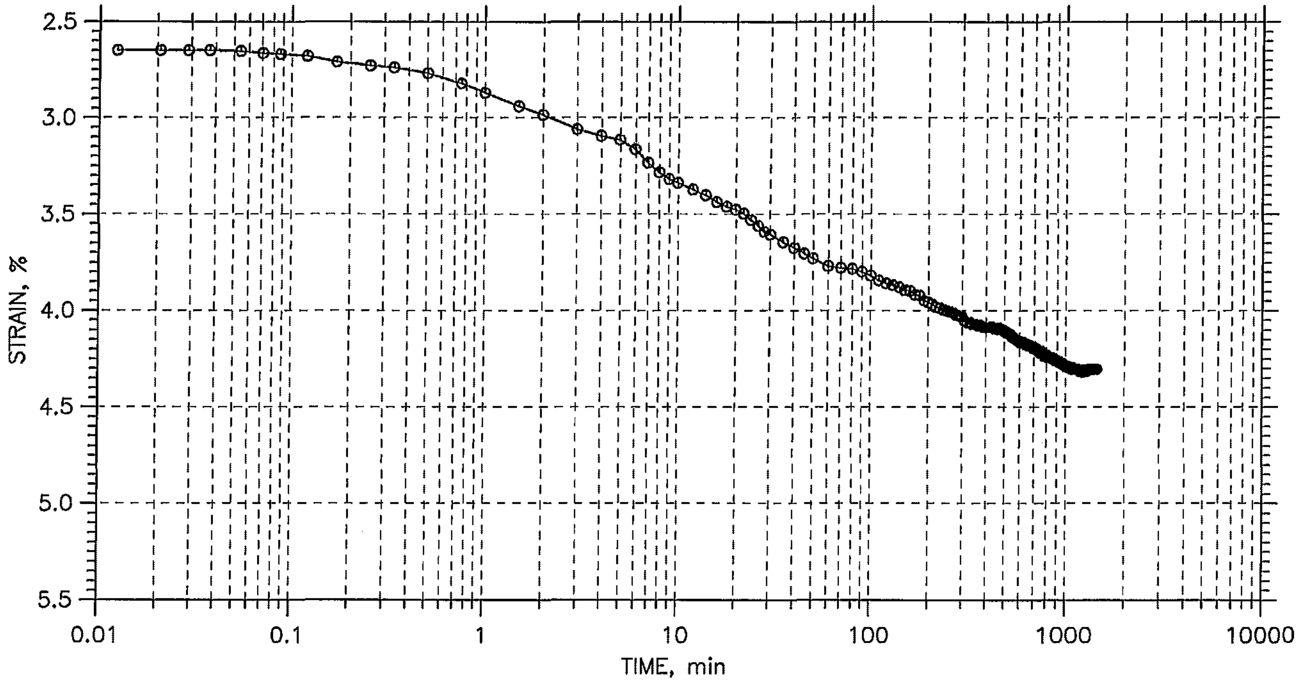
Mon, 27-AUG-2007 12:13:49

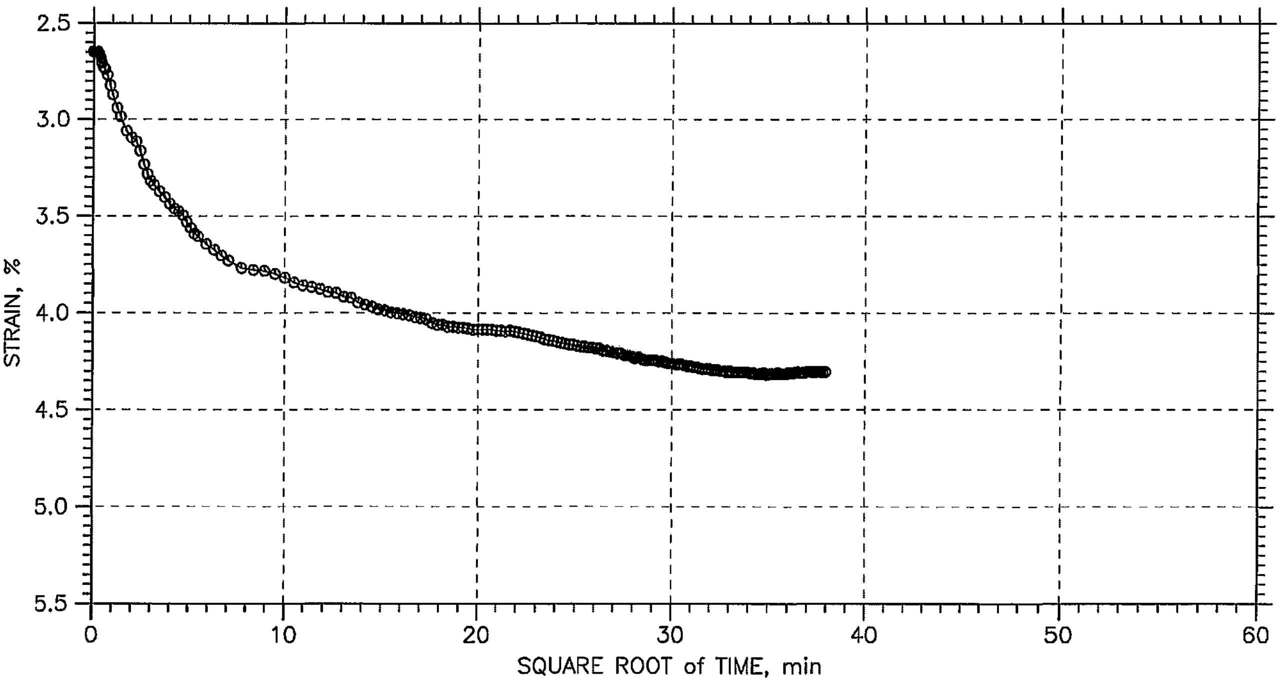
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

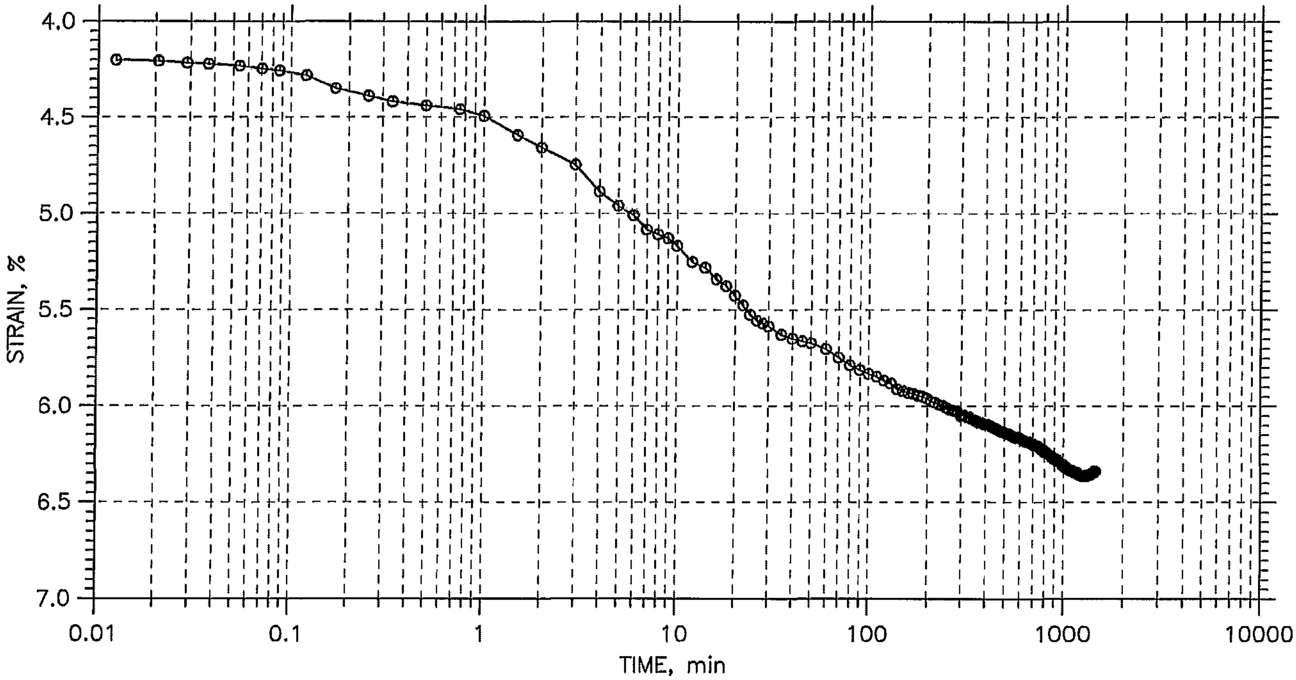
Mon, 27-AUG-2007 12:14:00

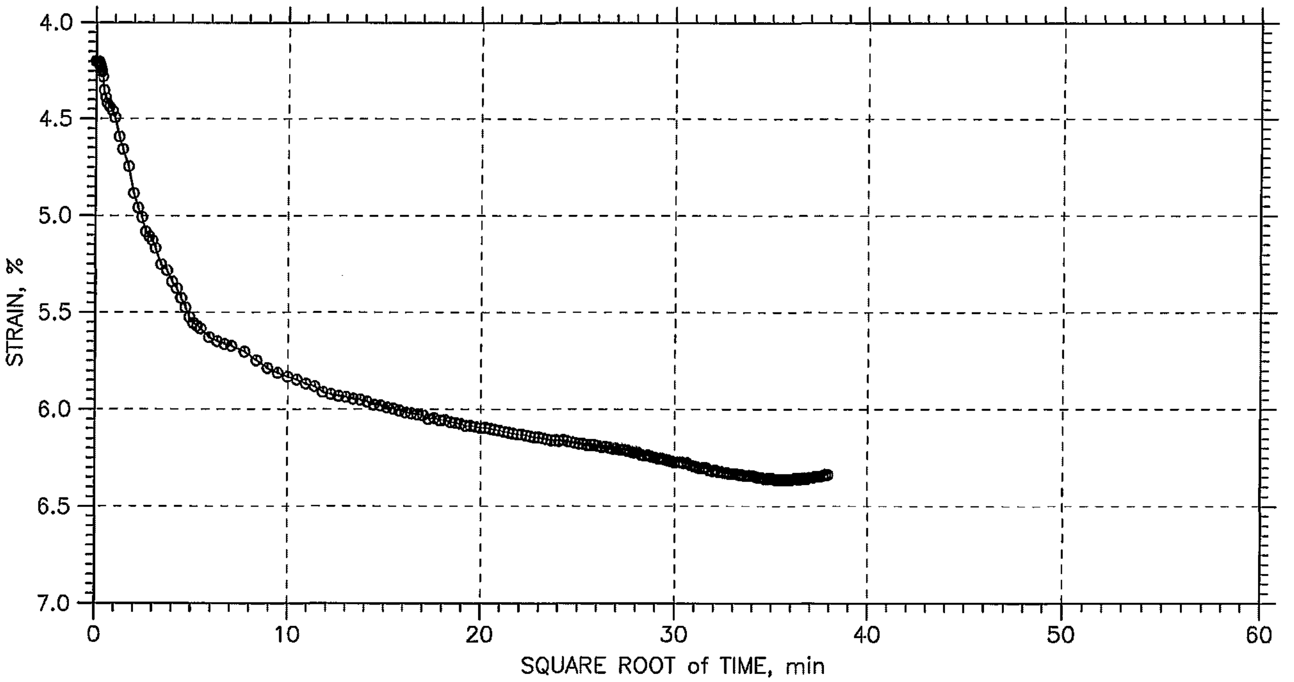
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

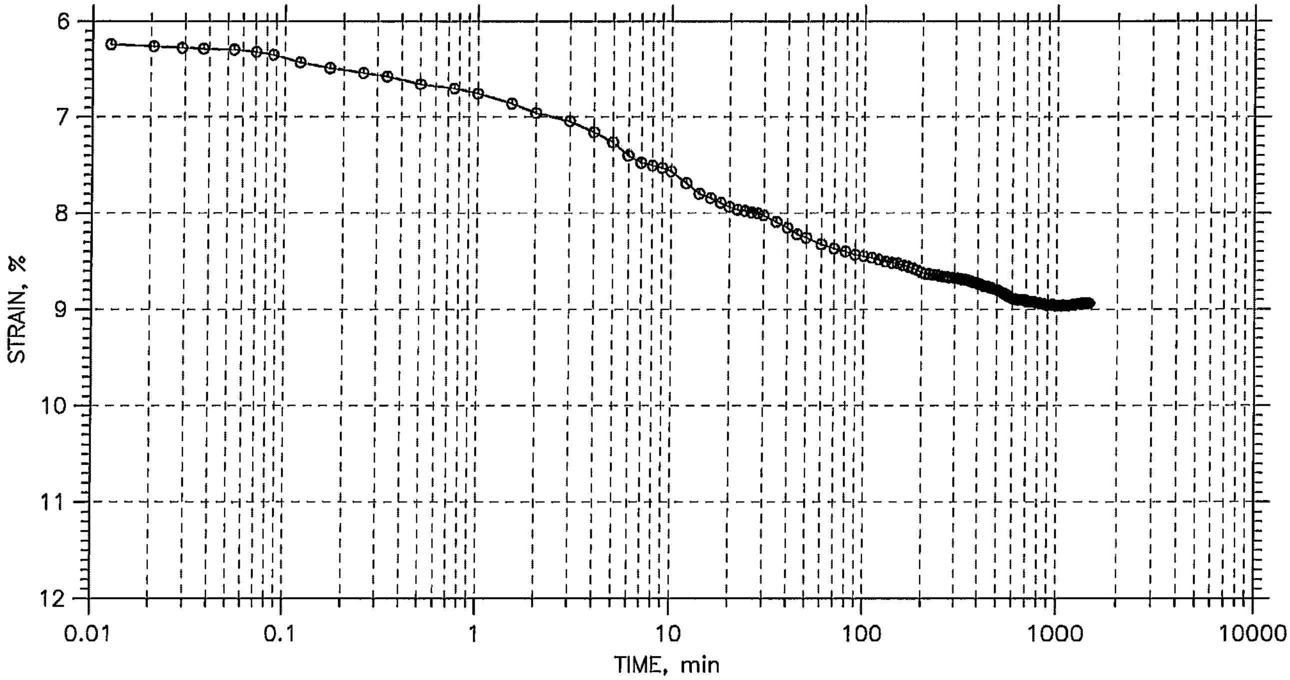
Mon, 27-AUG-2007 12:14:09

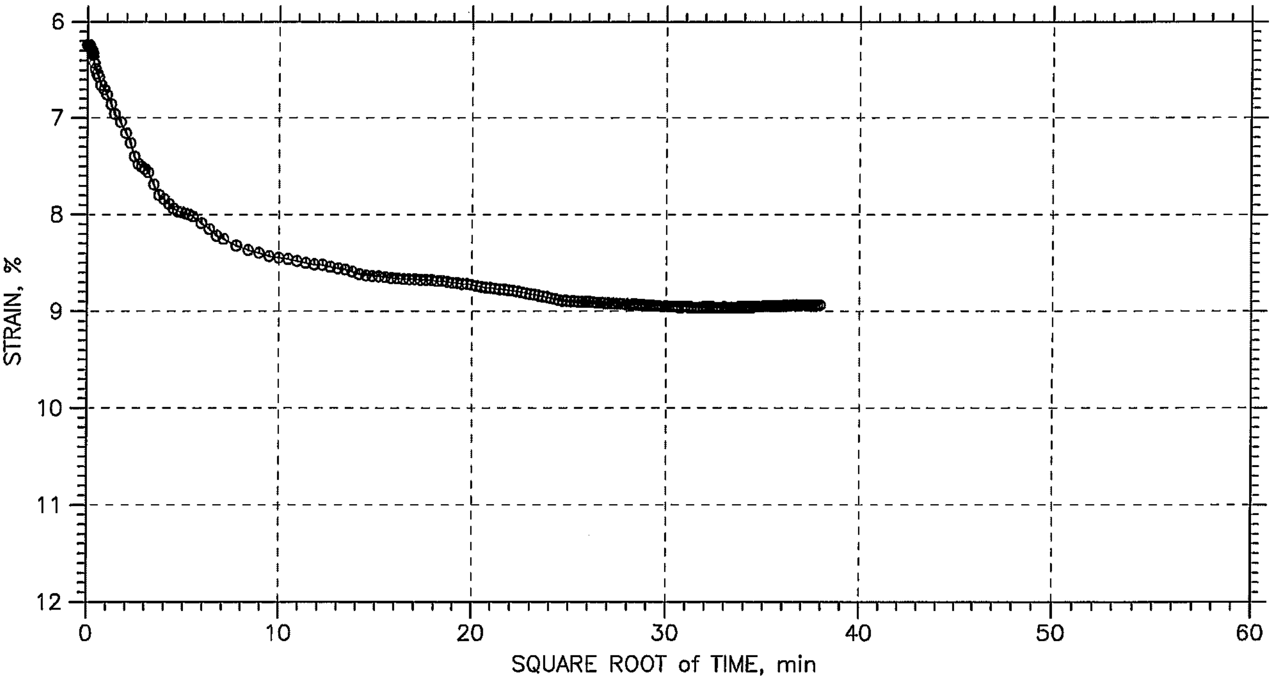
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

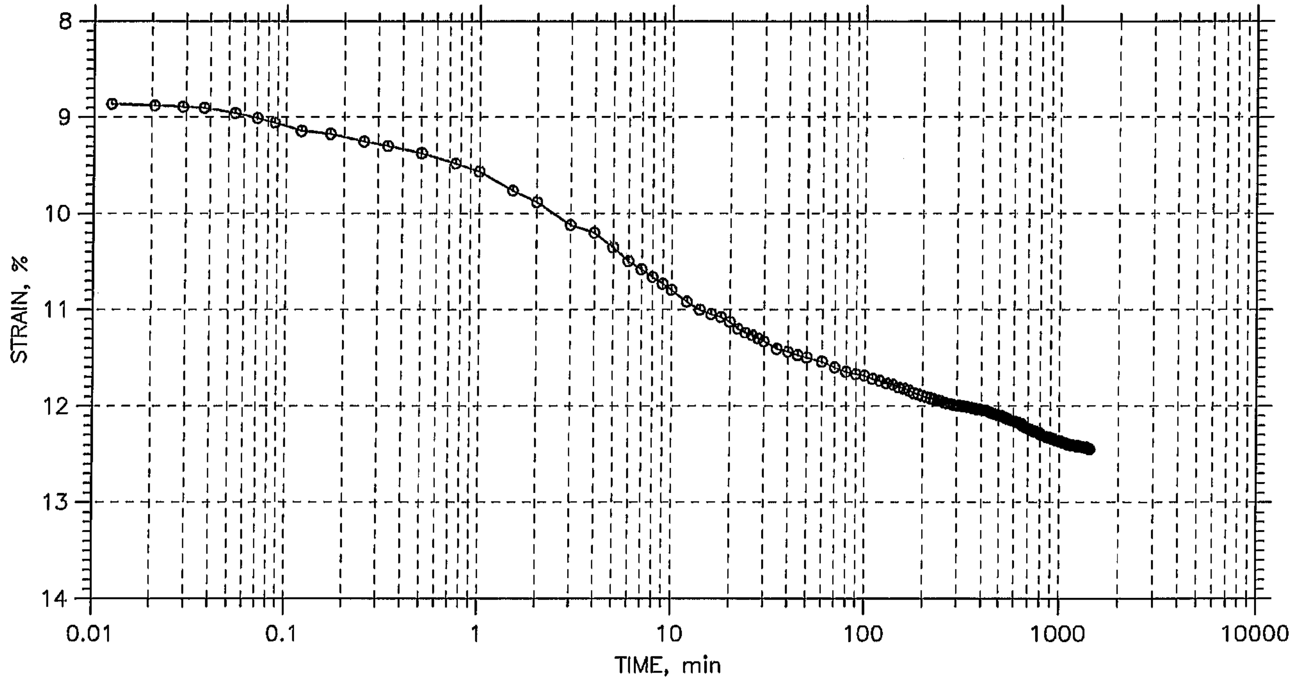
Mon, 27-AUG-2007 12:14:25

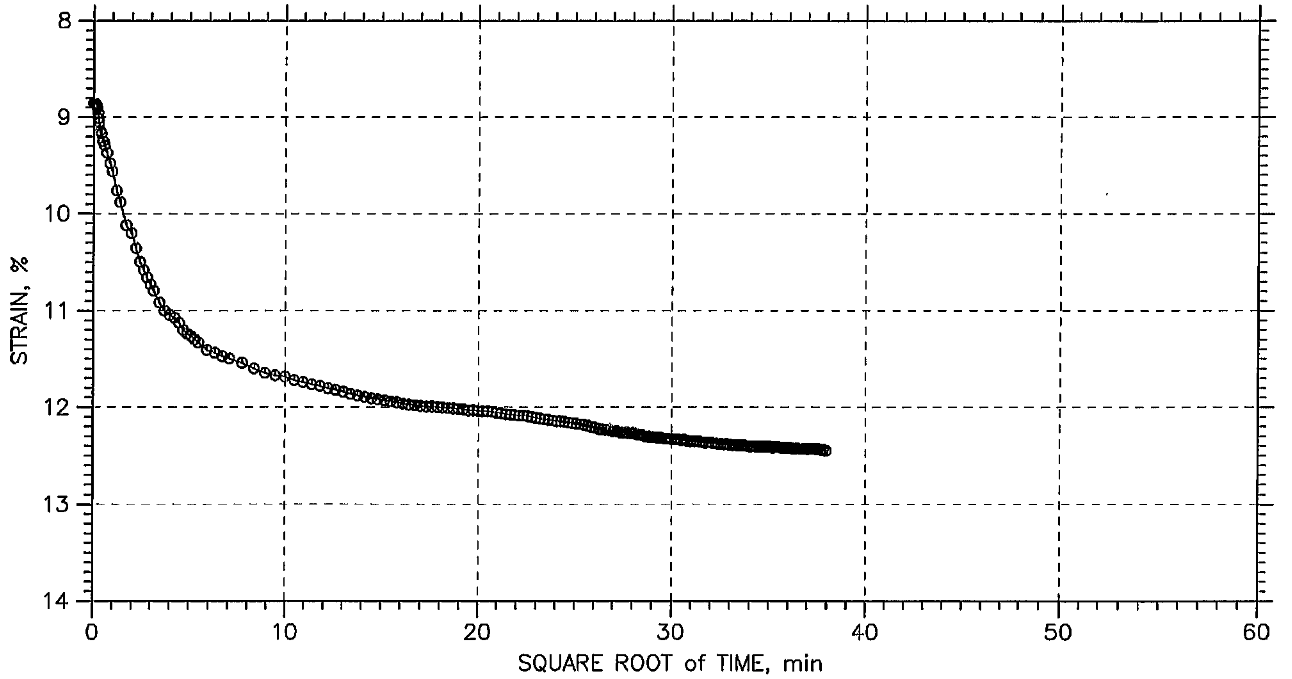
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

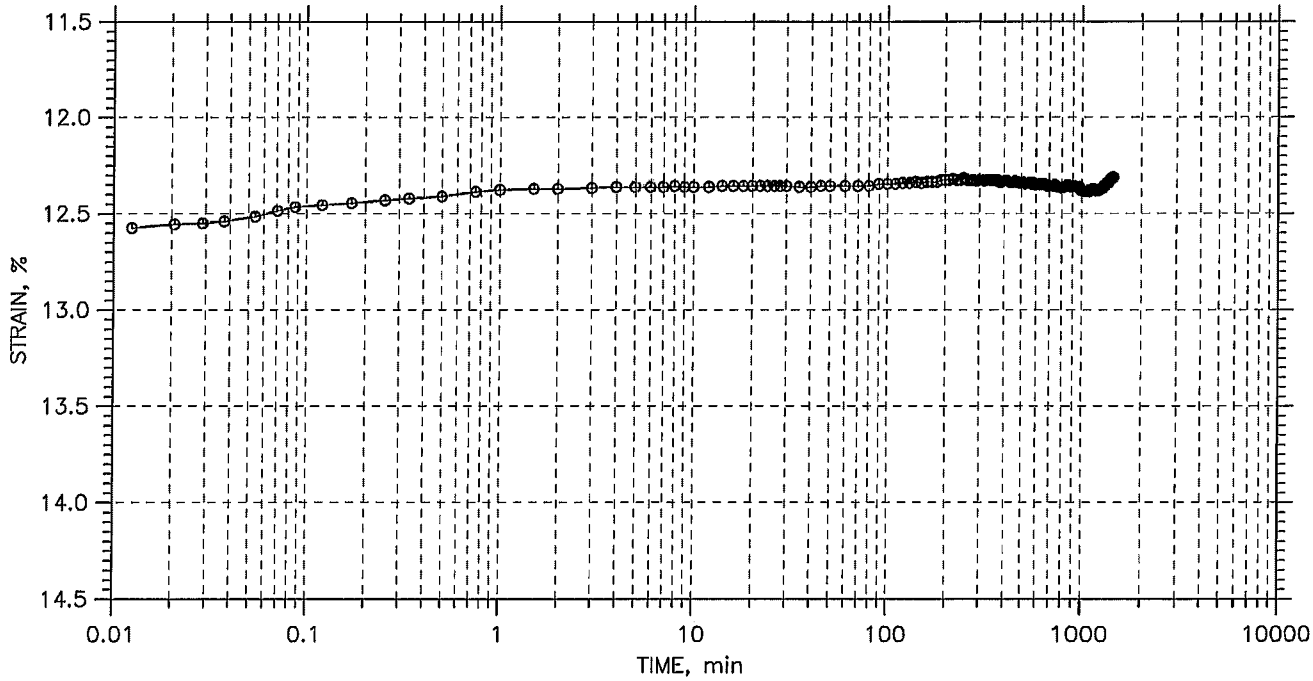
Mon, 27-AUG-2007 12:14:36

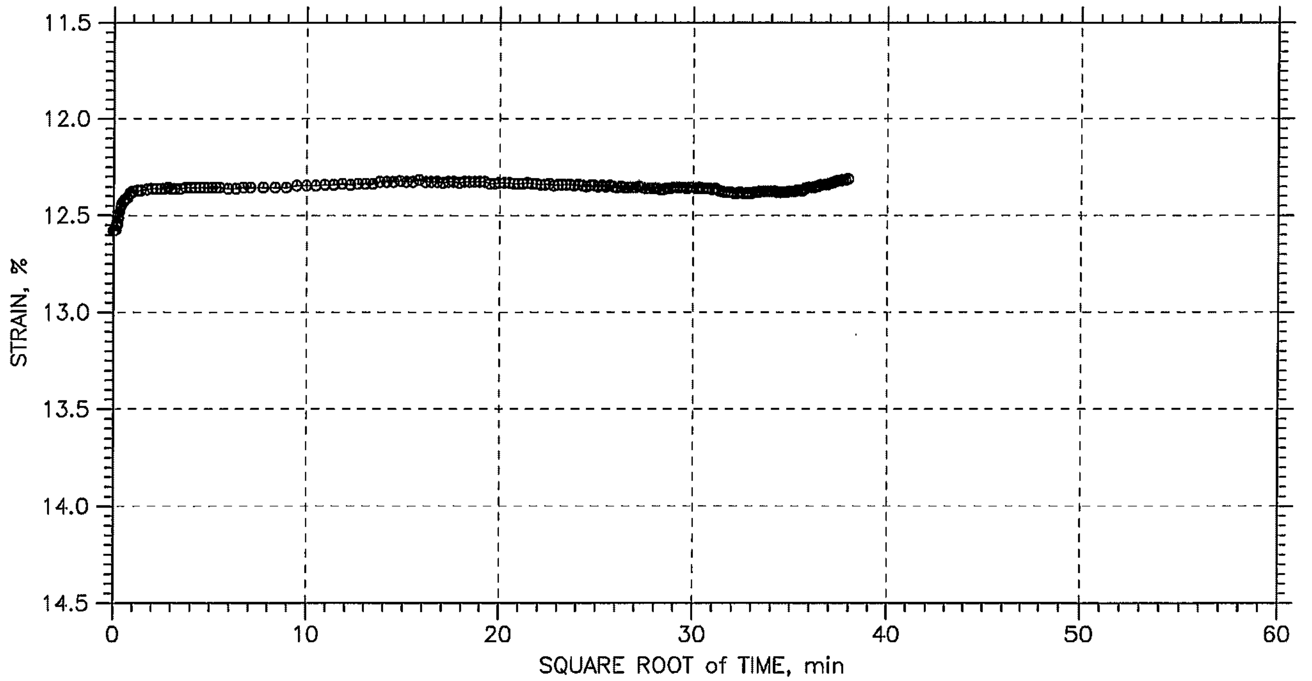
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

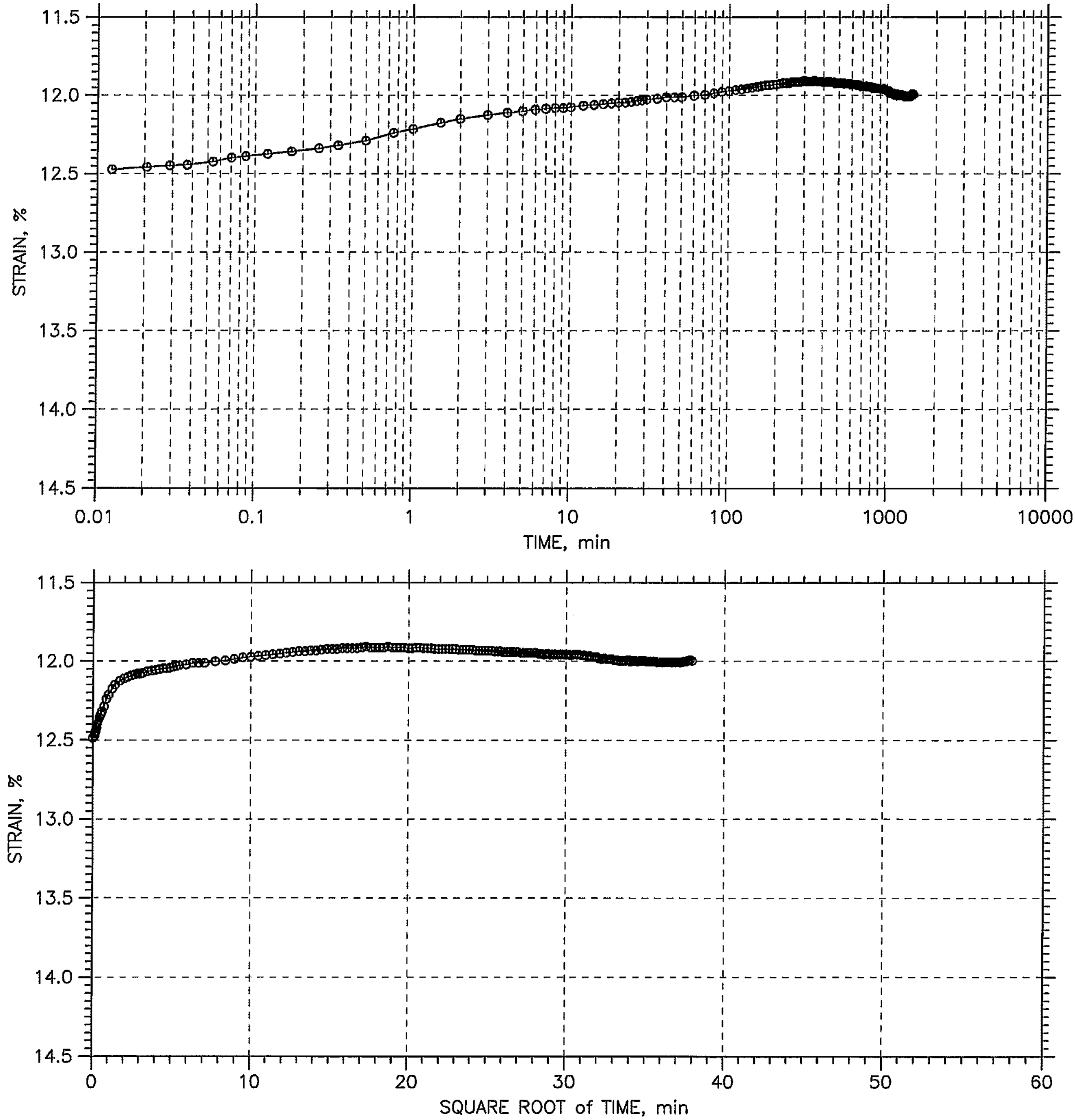
Mon, 27-AUG-2007 12:15:14

CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 0.2 tsf



GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

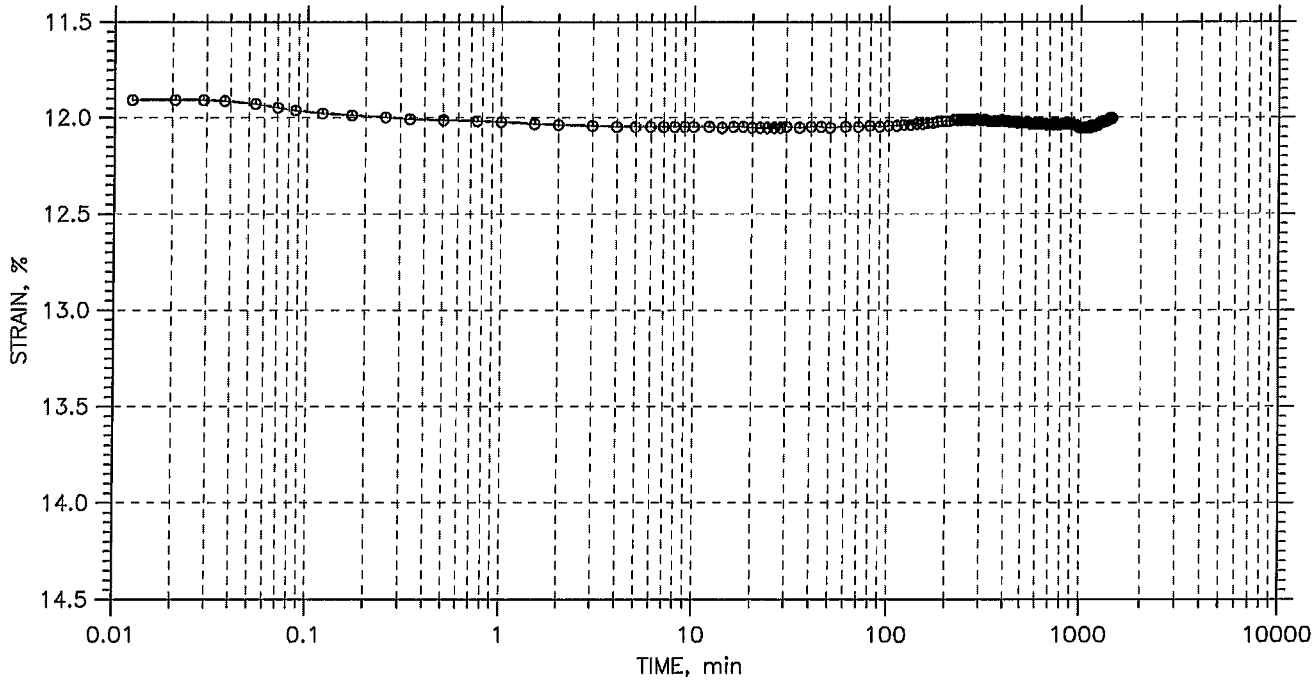
Mon, 27-AUG-2007 12:15:23

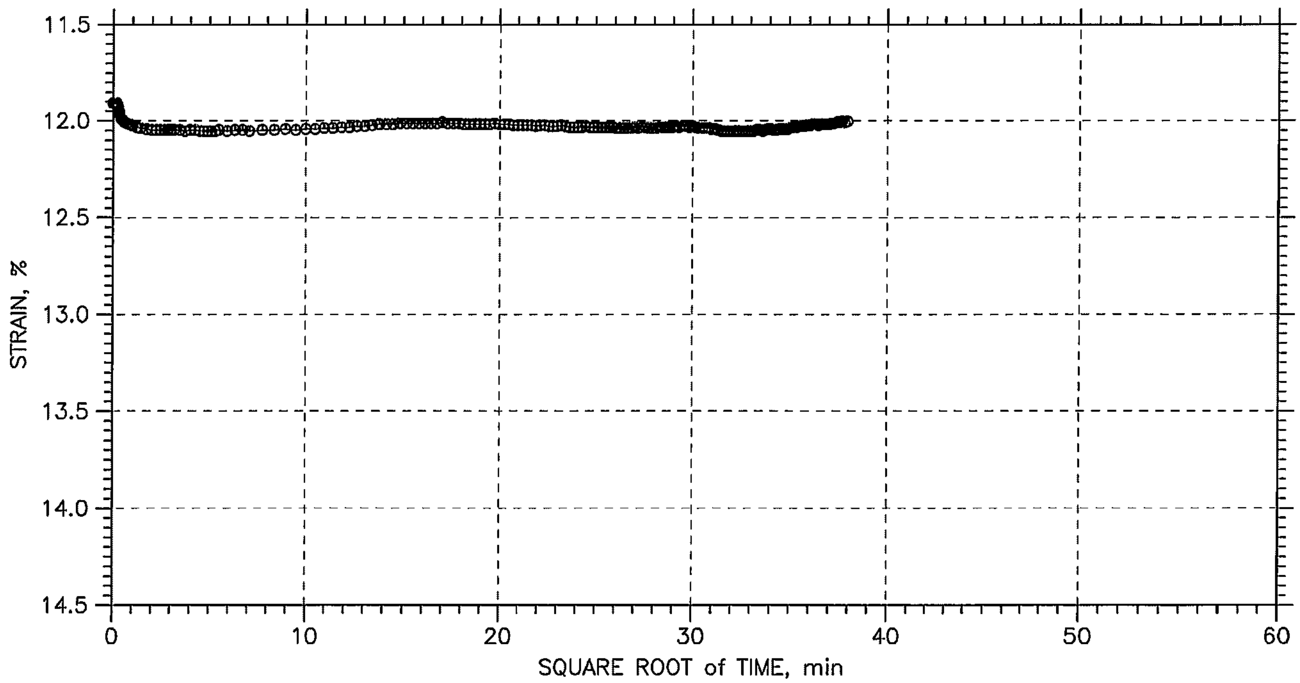
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

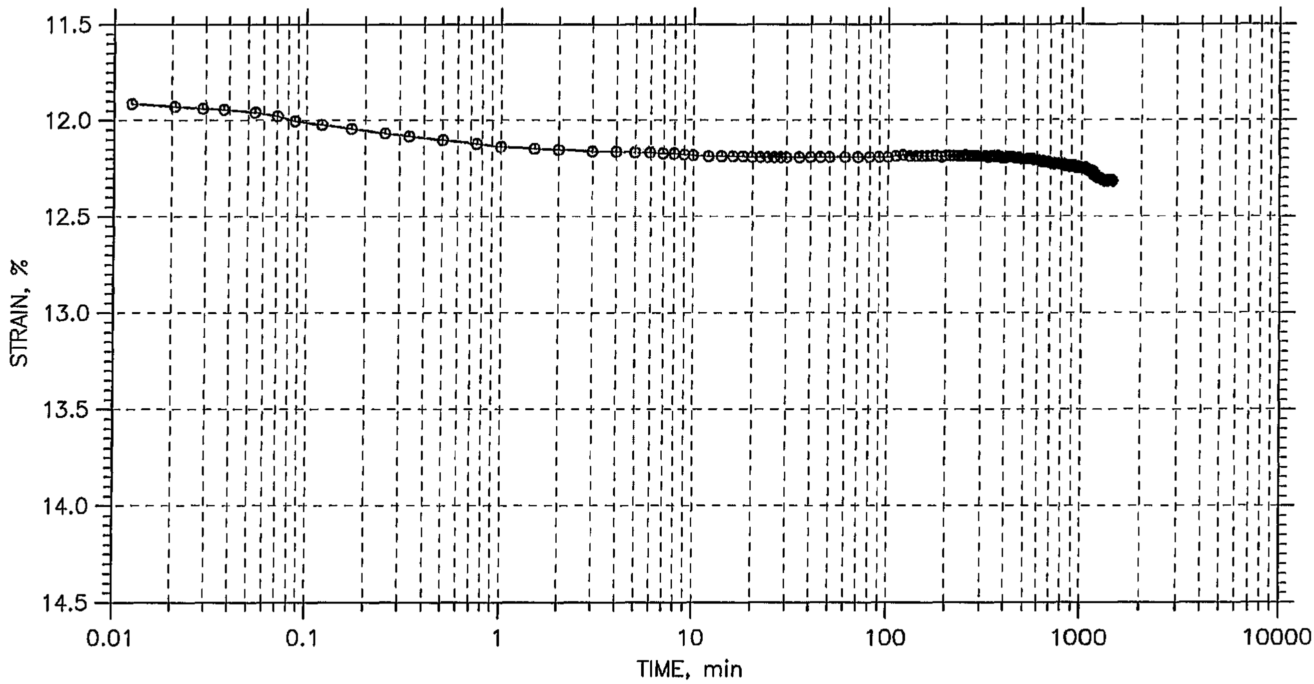
Mon, 27-AUG-2007 12:15:32

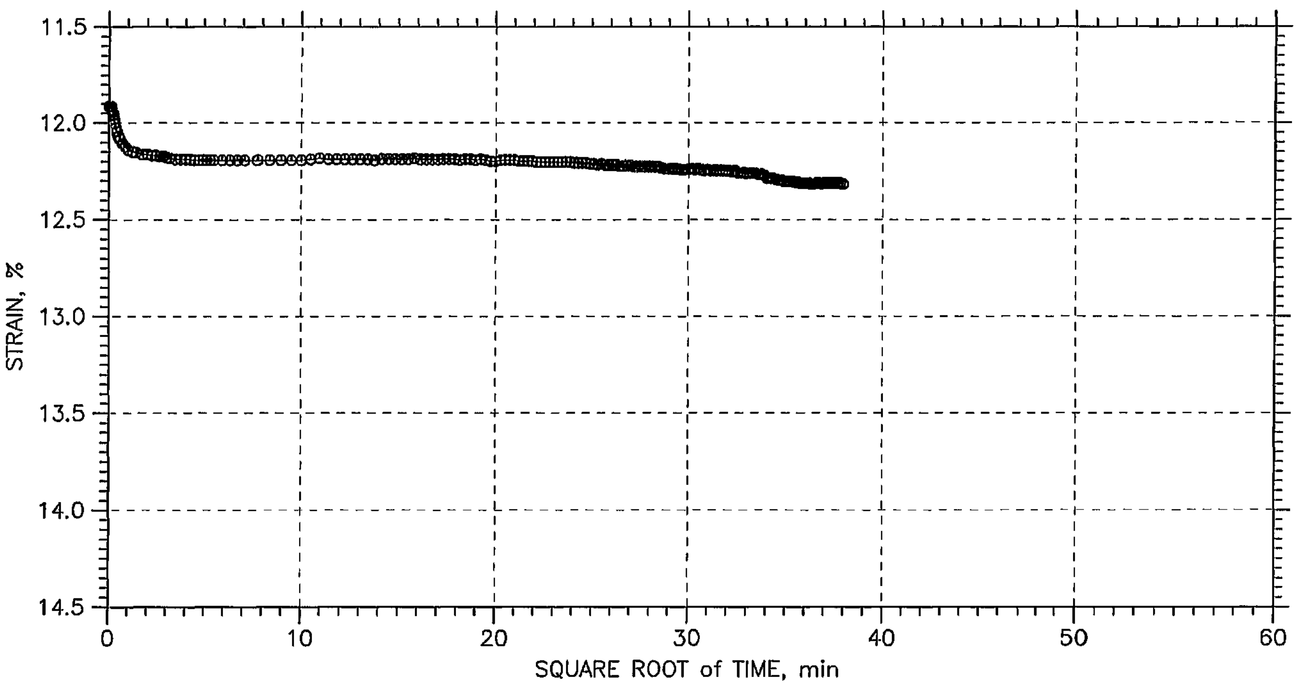
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

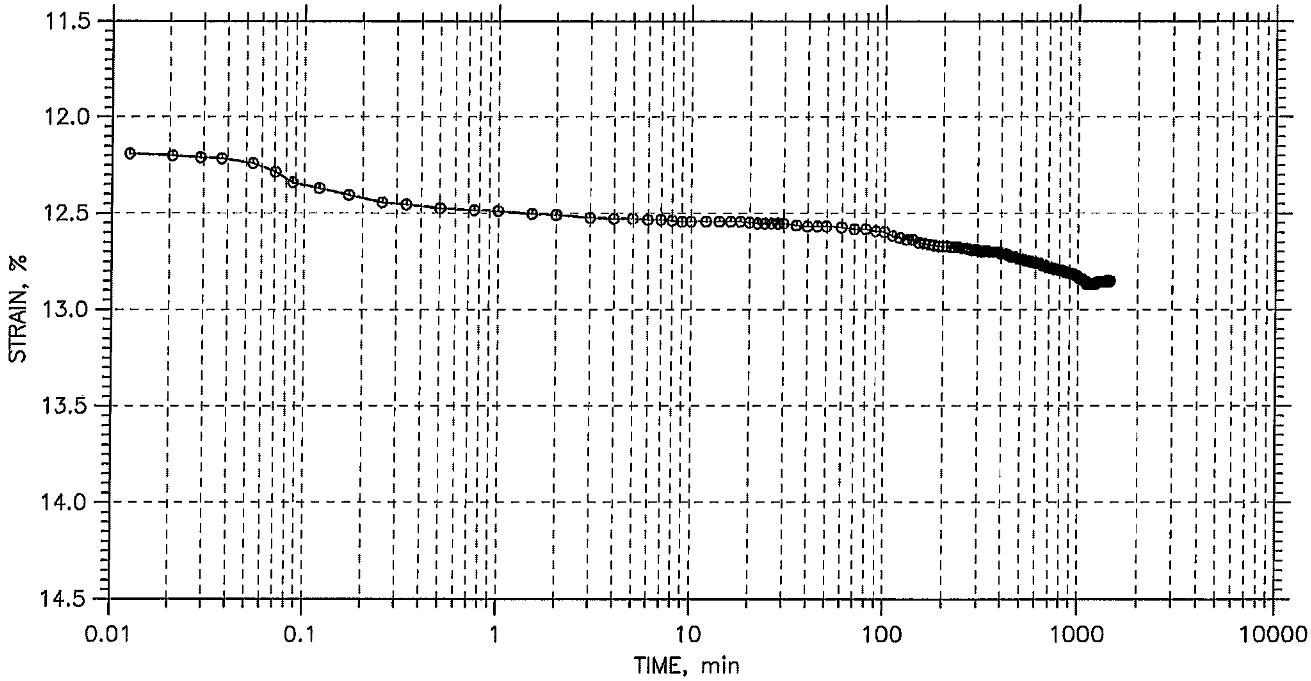
Mon, 27-AUG-2007 12:15:49

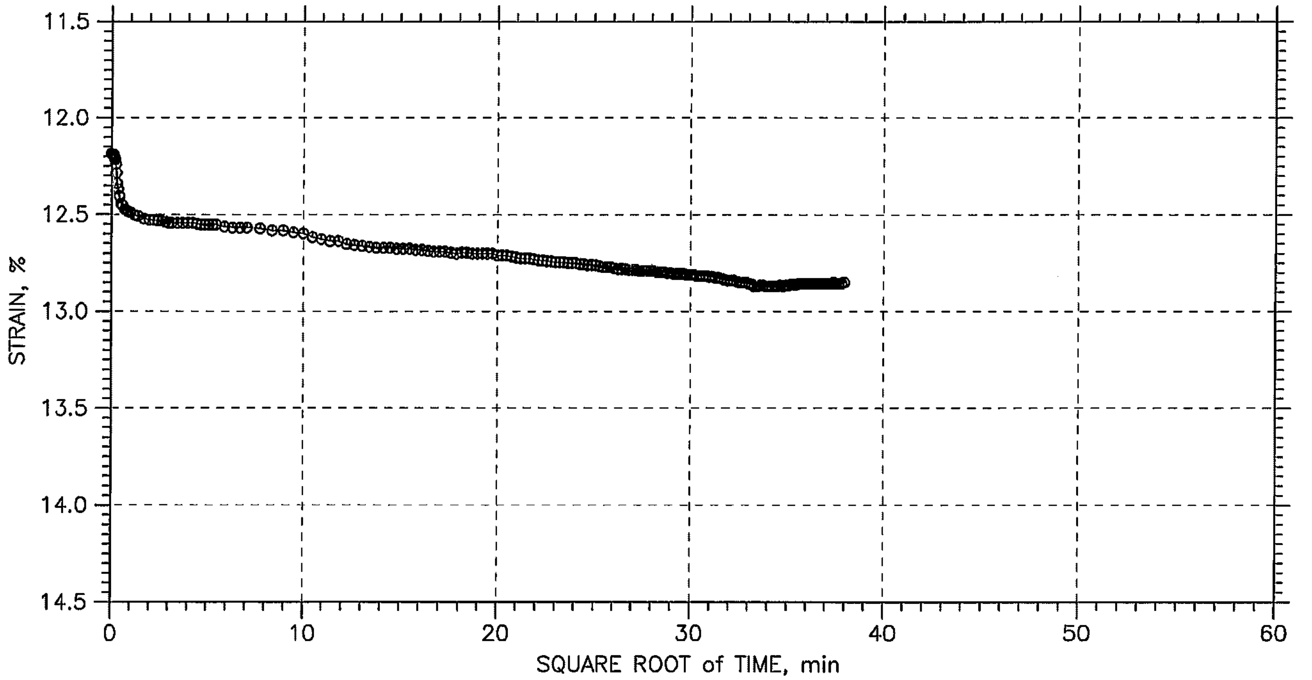
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

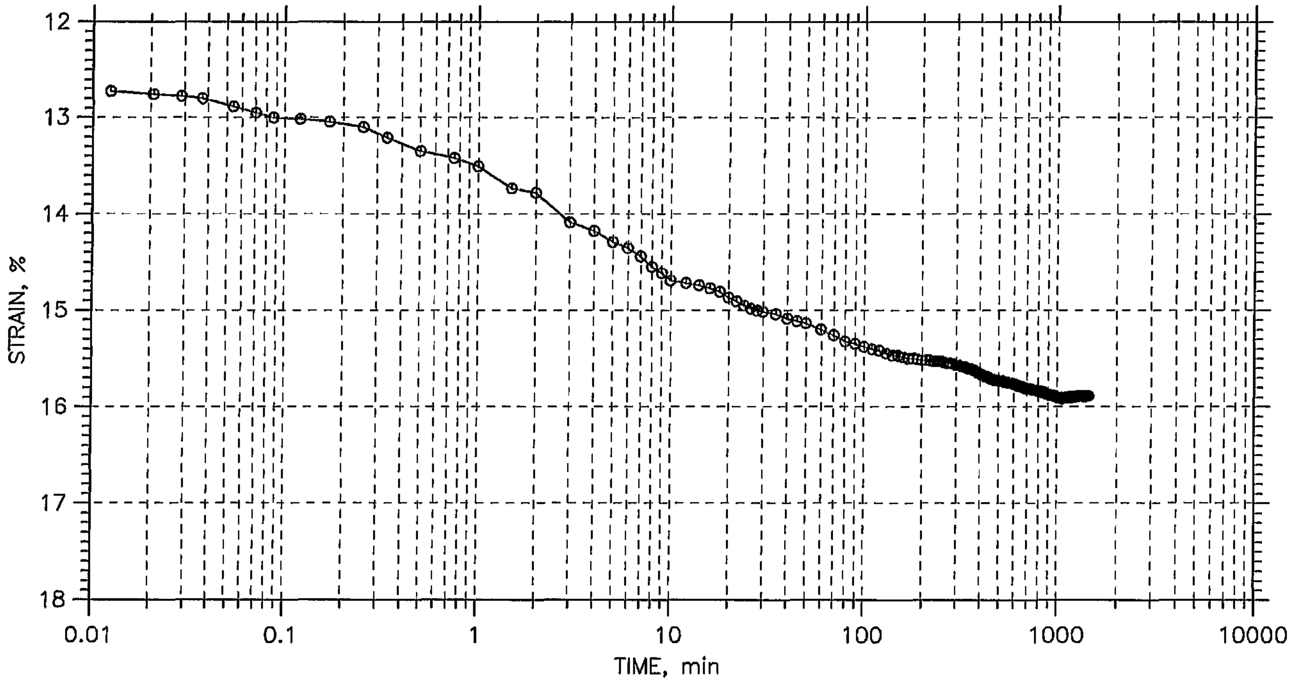
Mon, 27-AUG-2007 12:16:04

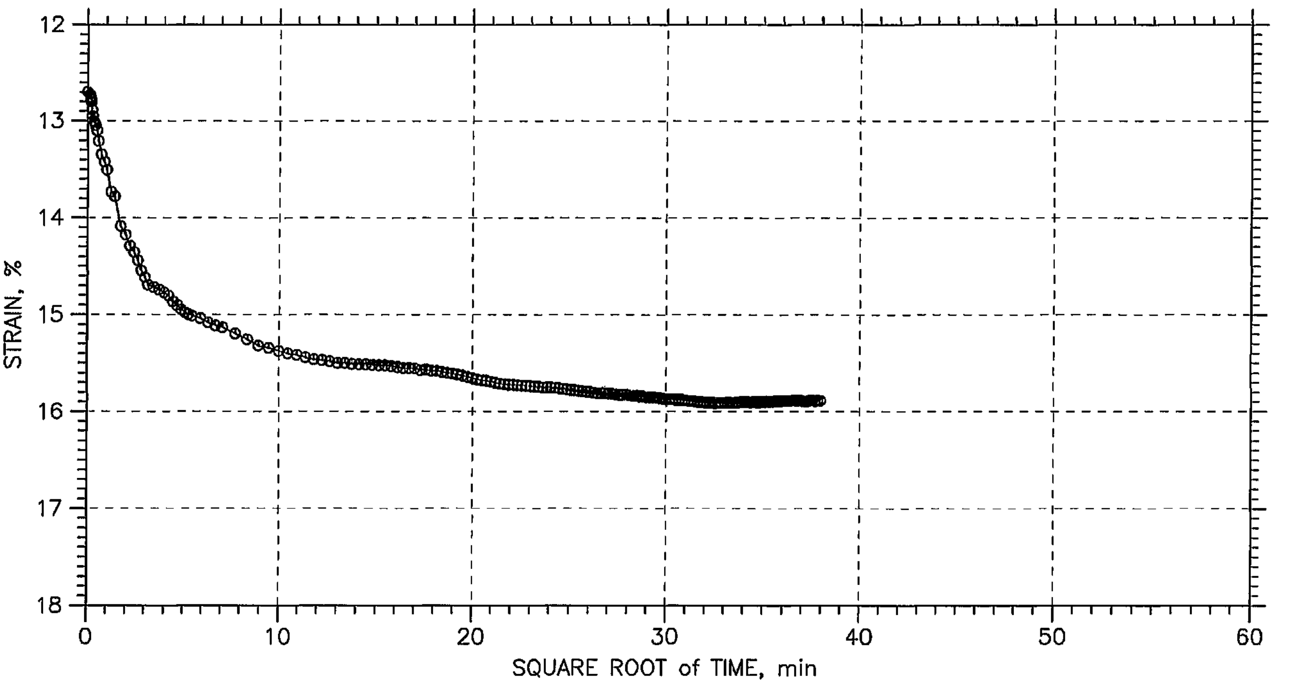
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

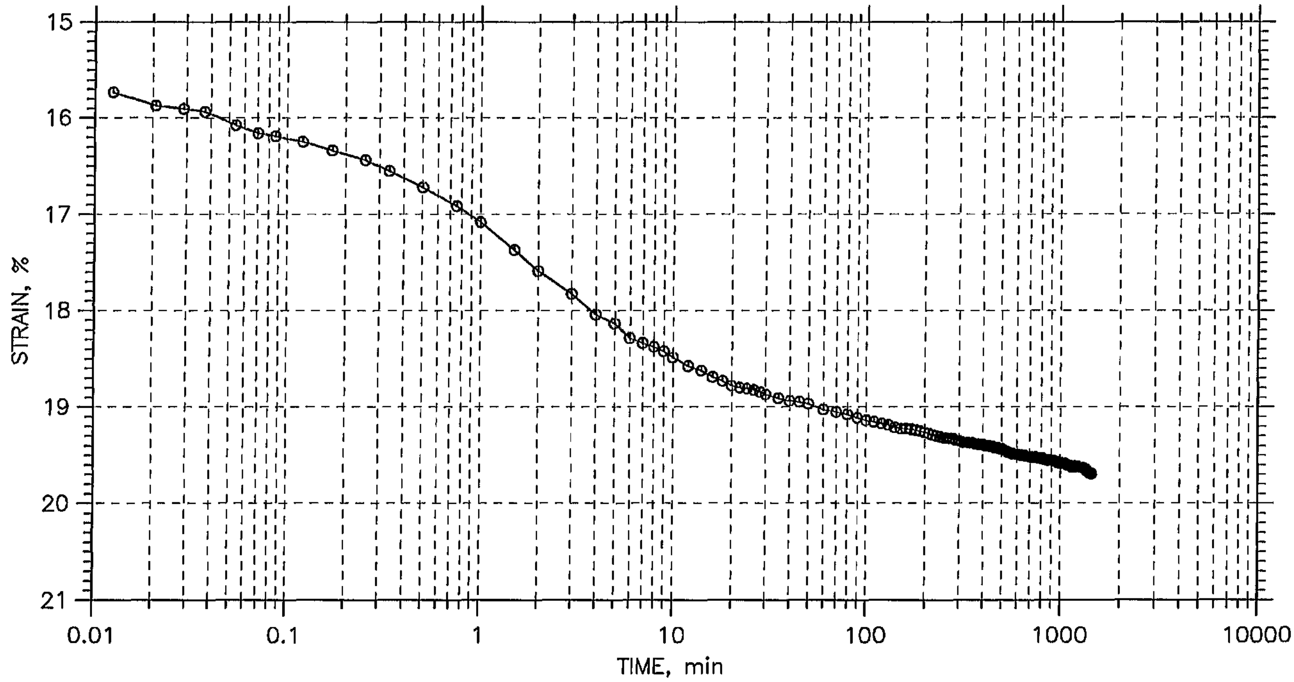
Mon, 27-AUG-2007 12:16:17

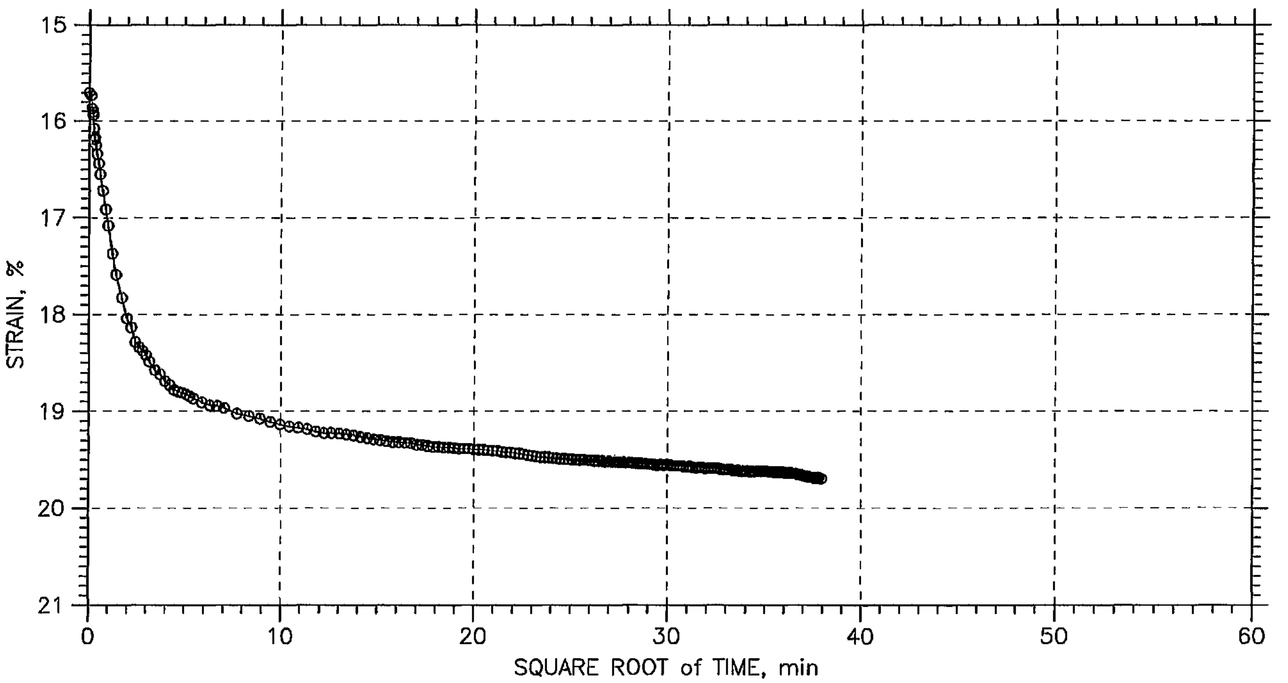
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

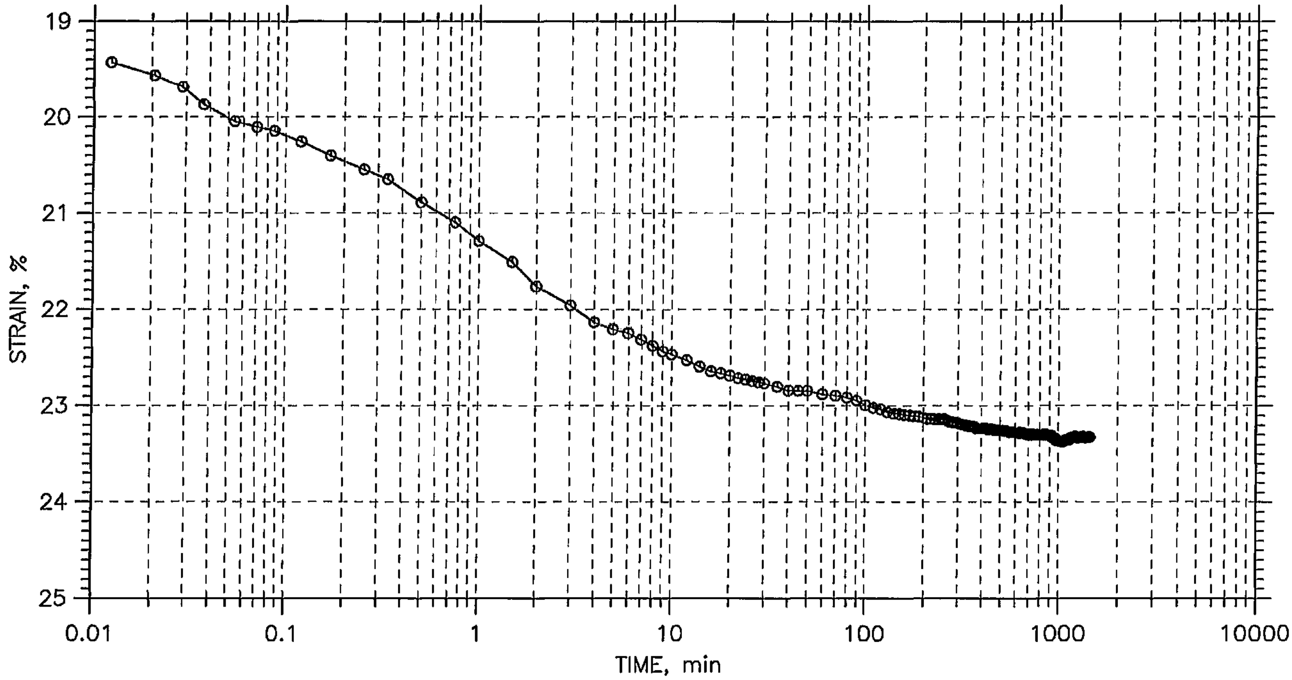
Mon, 27-AUG-2007 12:16:25

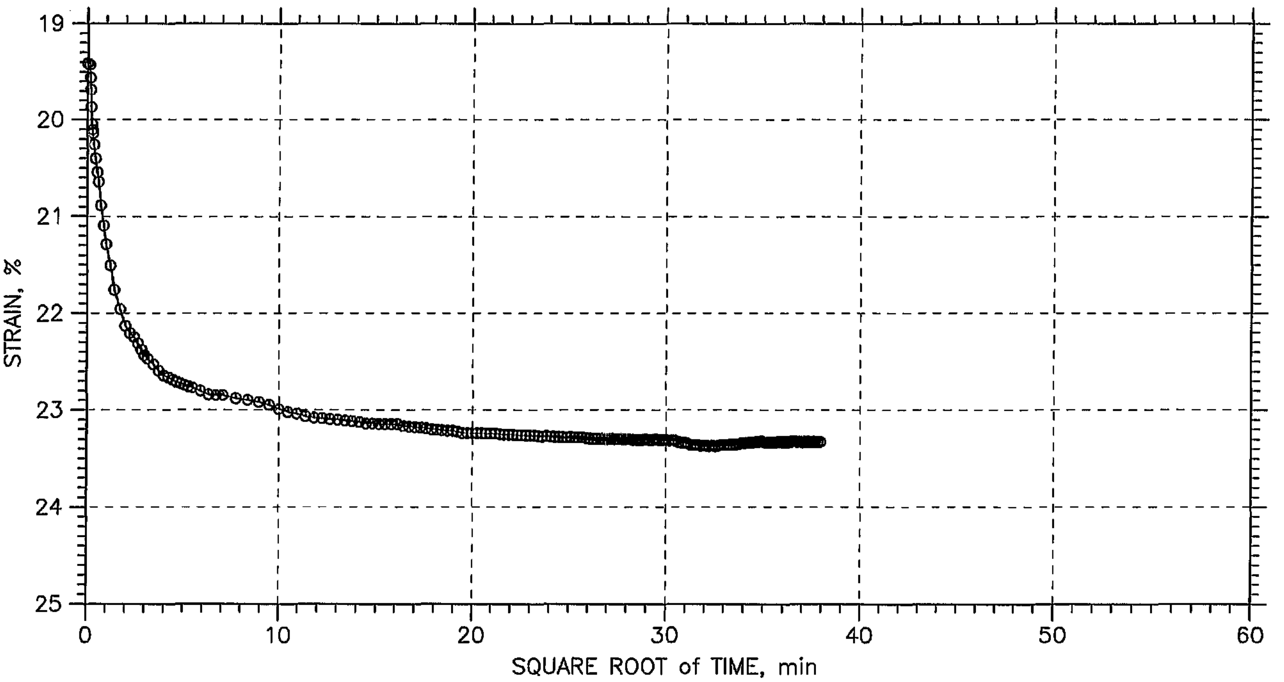
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

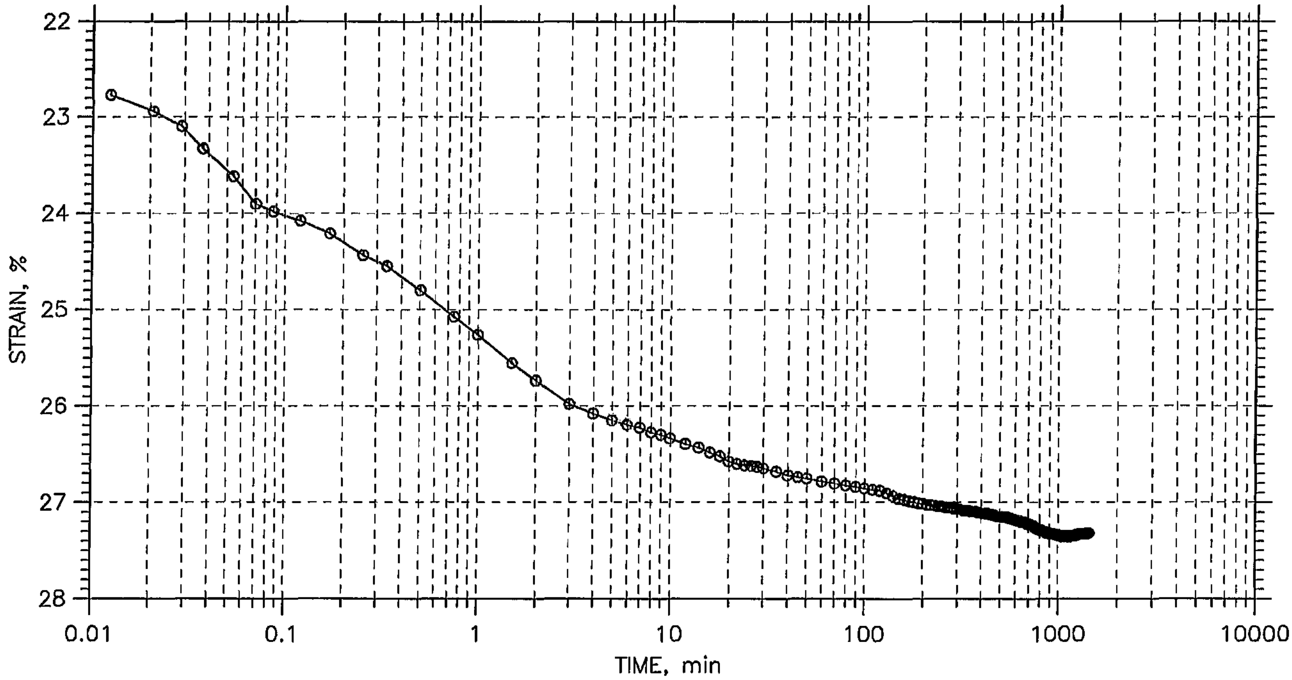
Mon, 27-AUG-2007 12:16:32

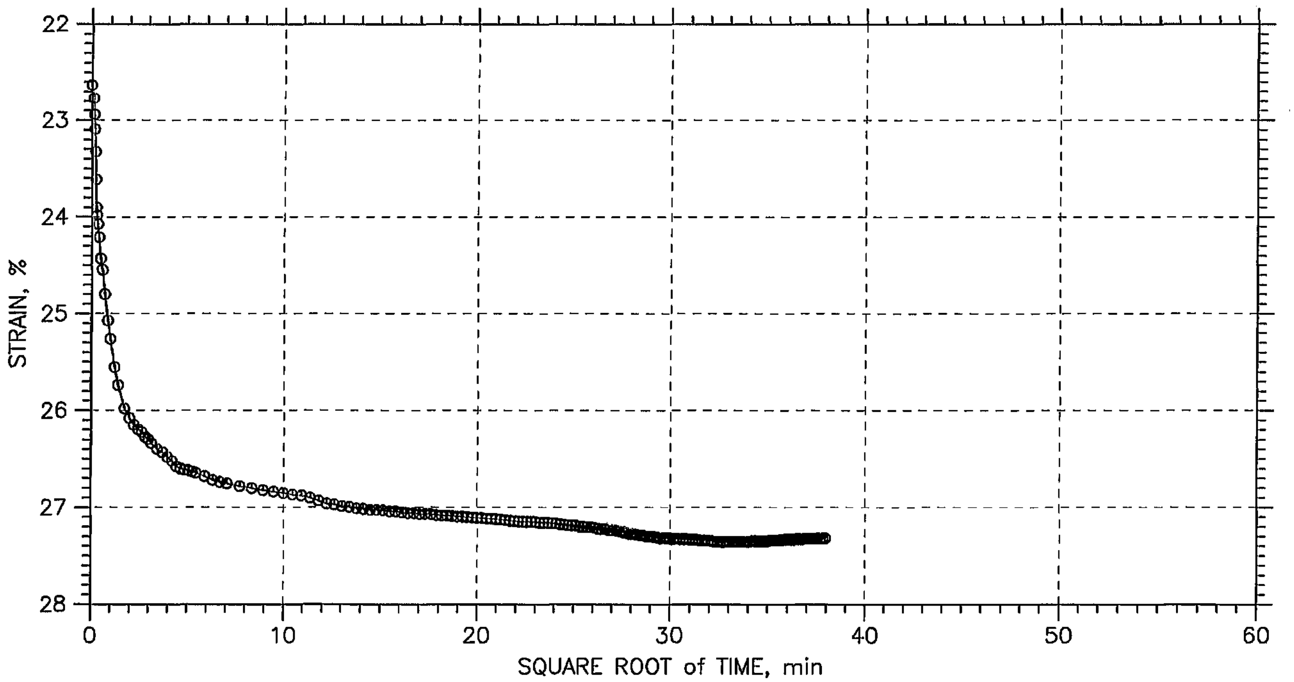
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

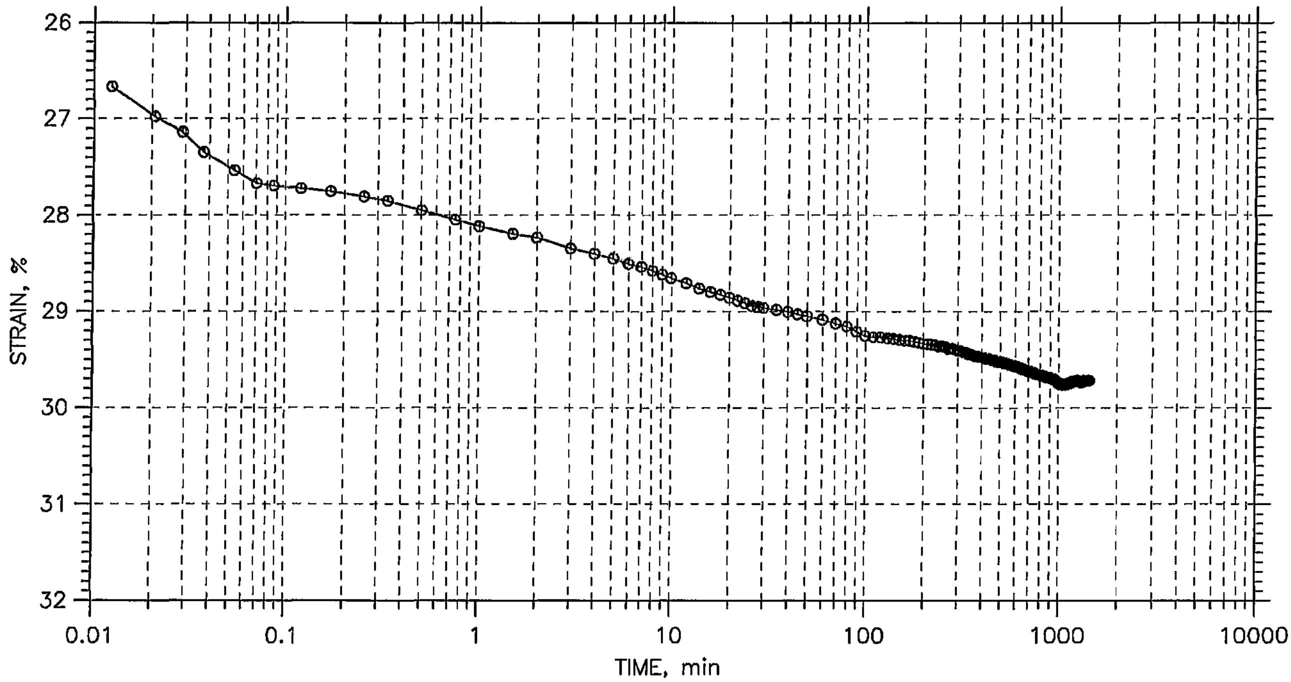
Mon, 27-AUG-2007 12:16:41

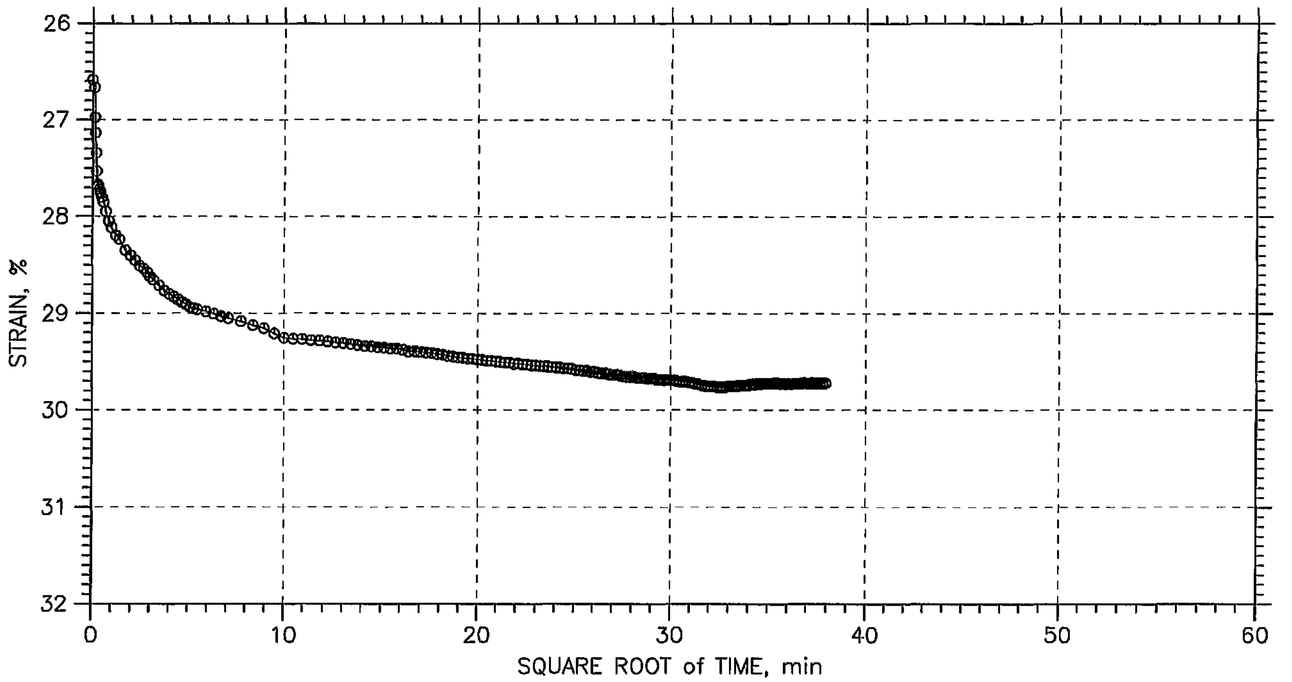
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

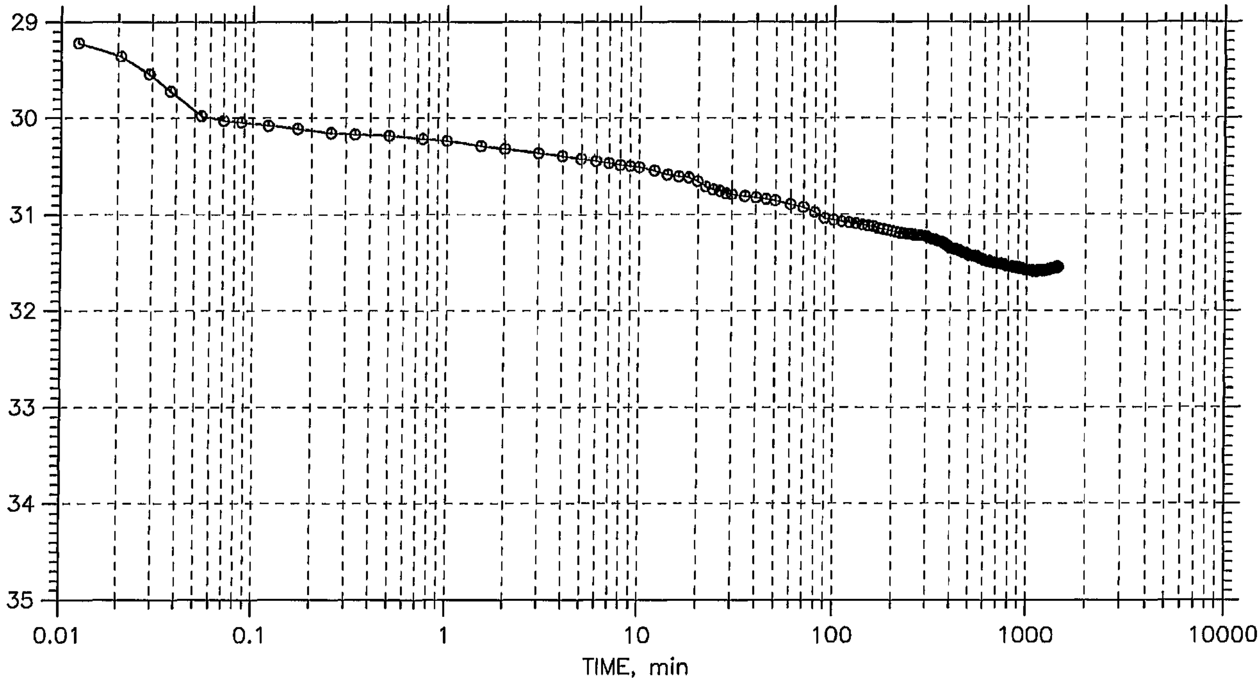
Mon, 27-AUG-2007 12:16:57

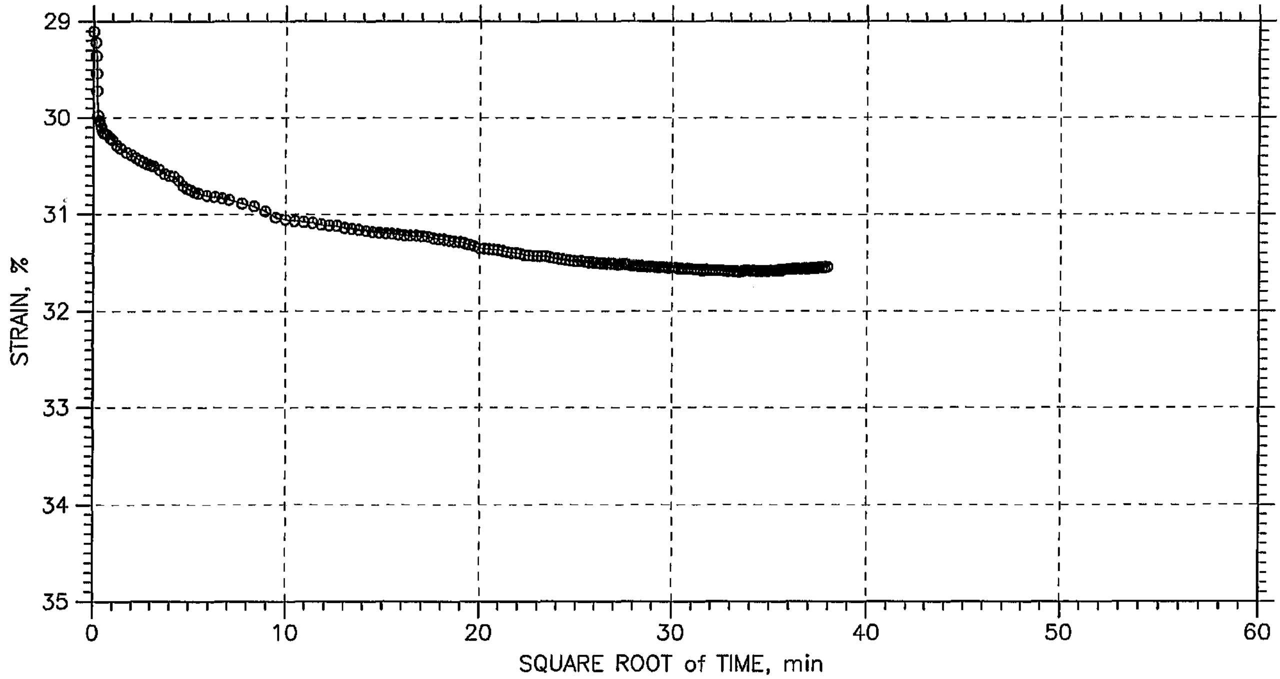
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

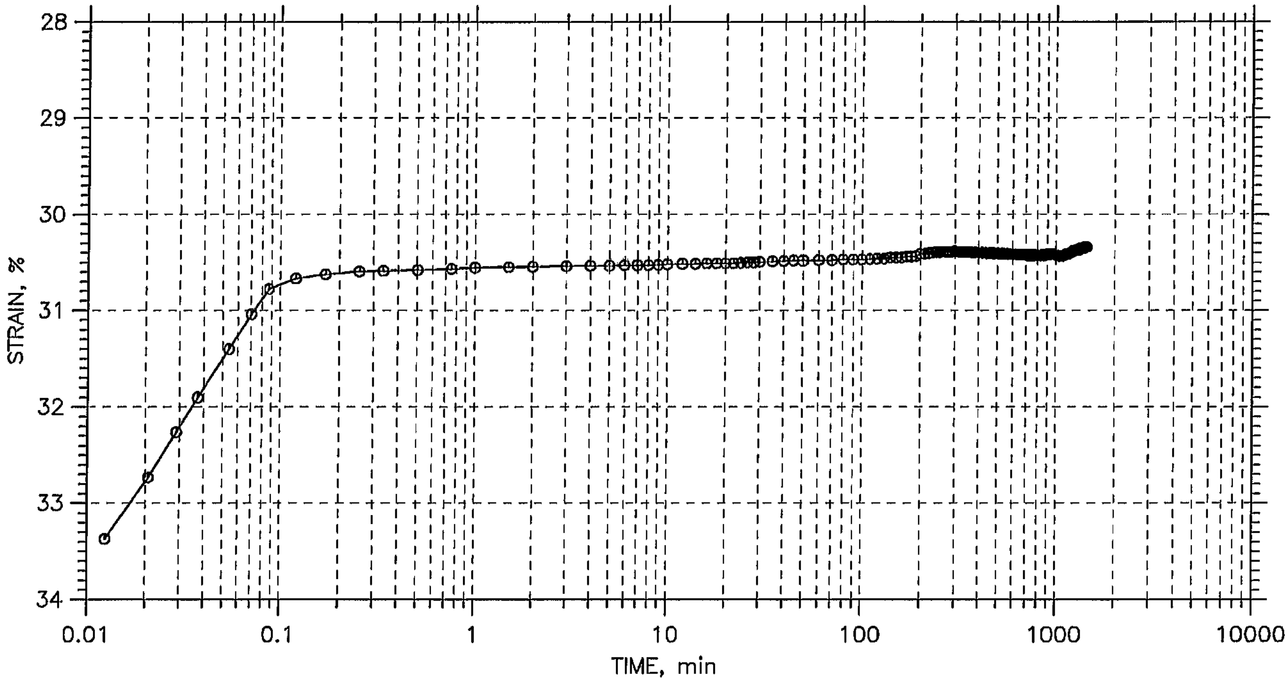
Mon, 27-AUG-2007 12:17:17

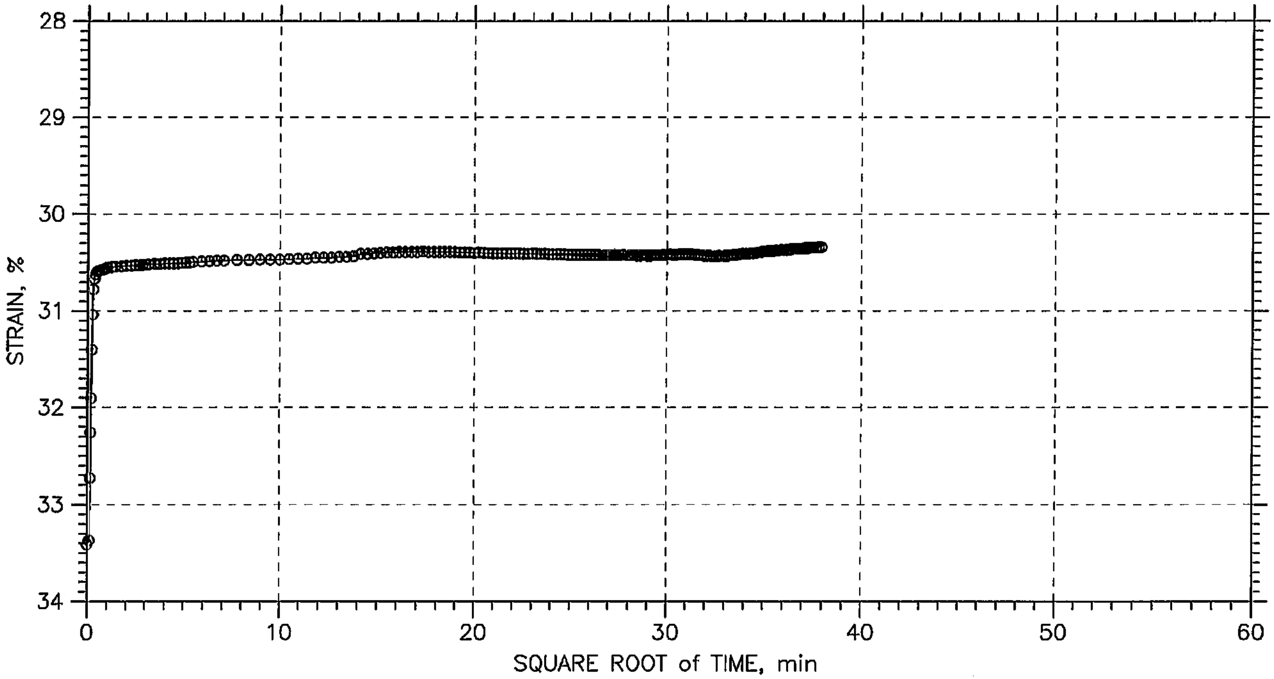
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

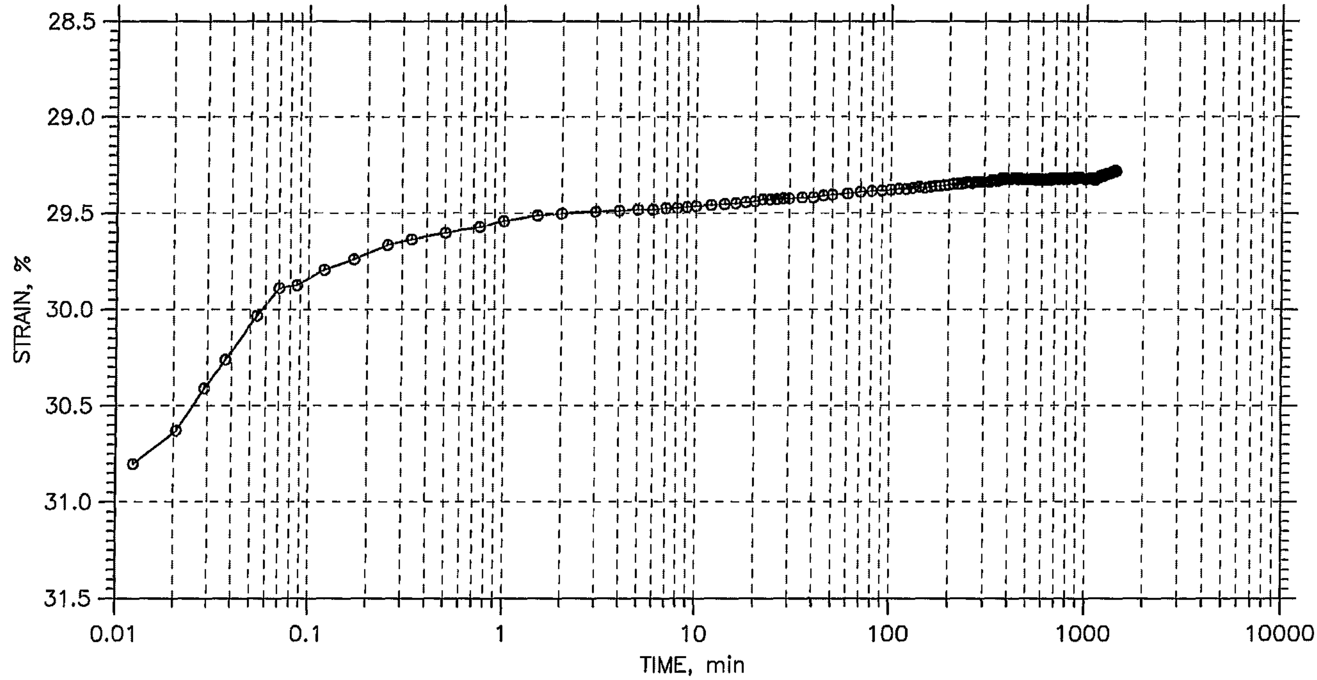
Mon, 27-AUG-2007 12:17:42

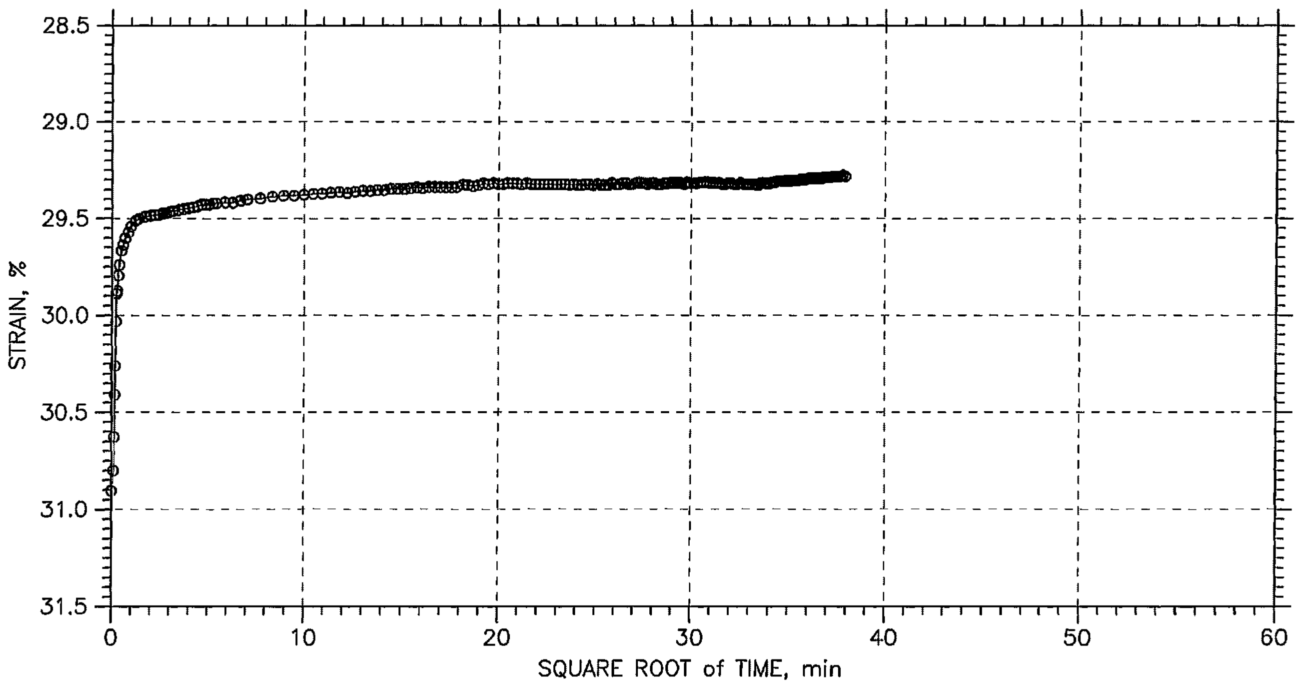
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

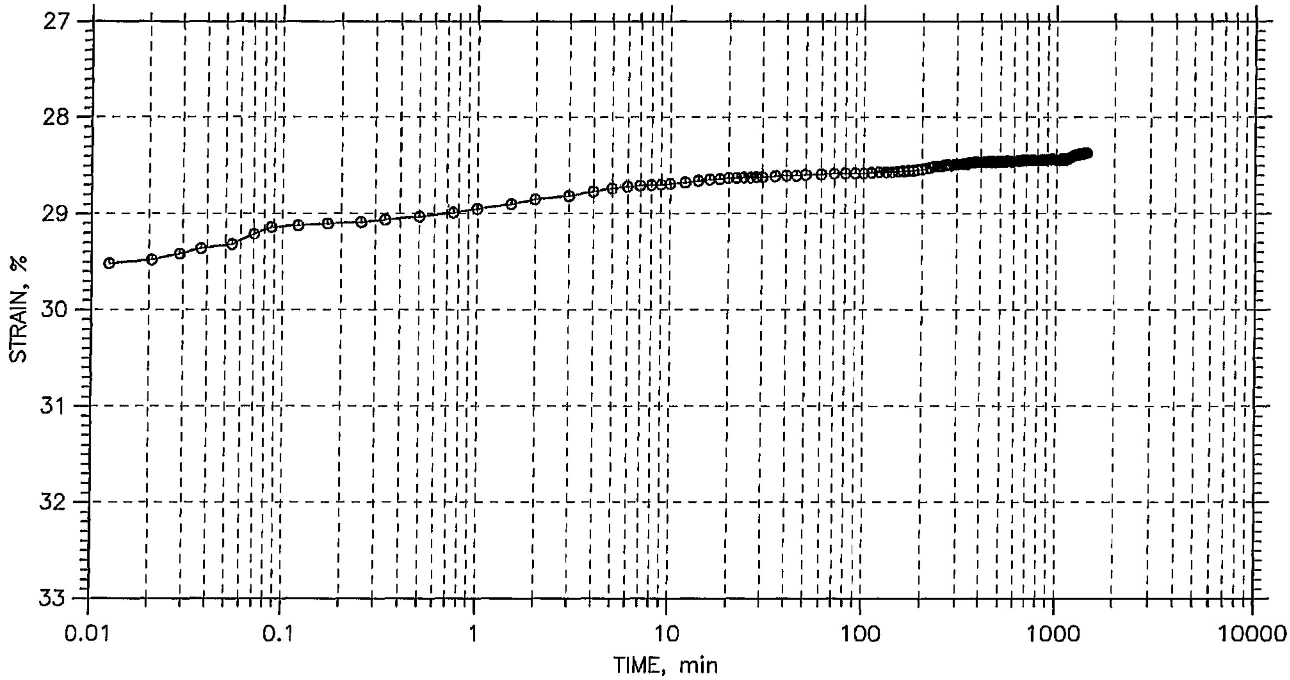
Mon, 27-AUG-2007 12:17:49

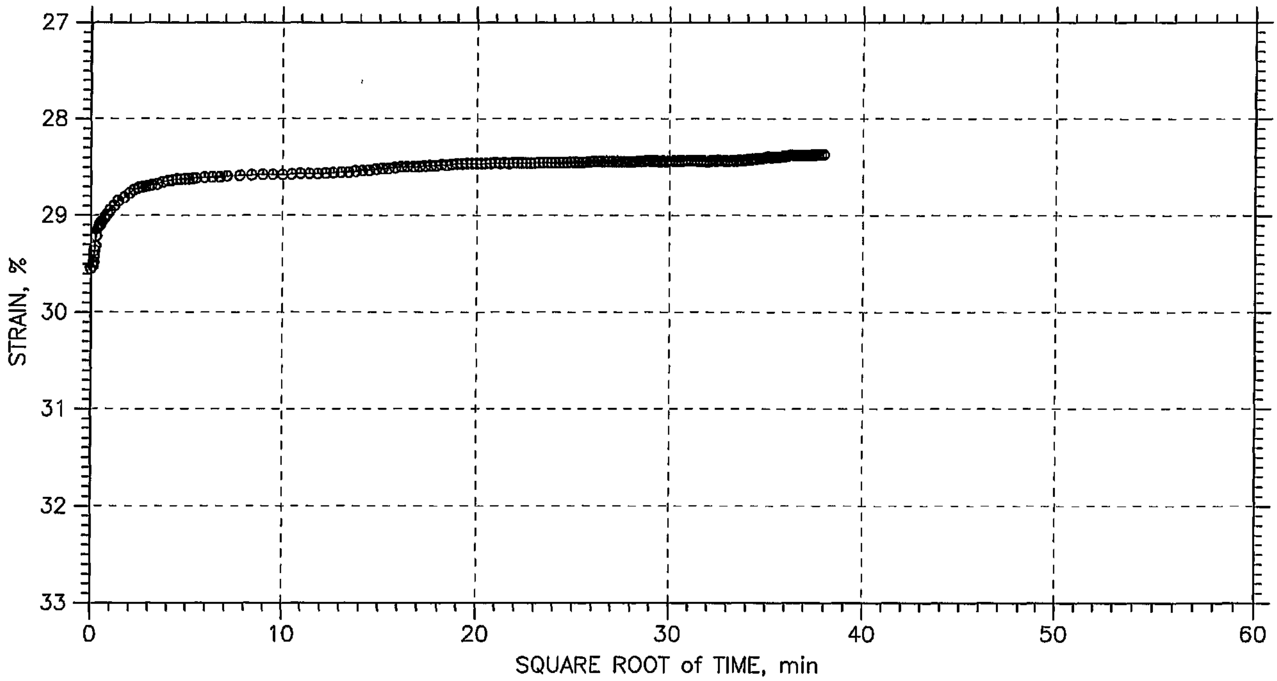
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf





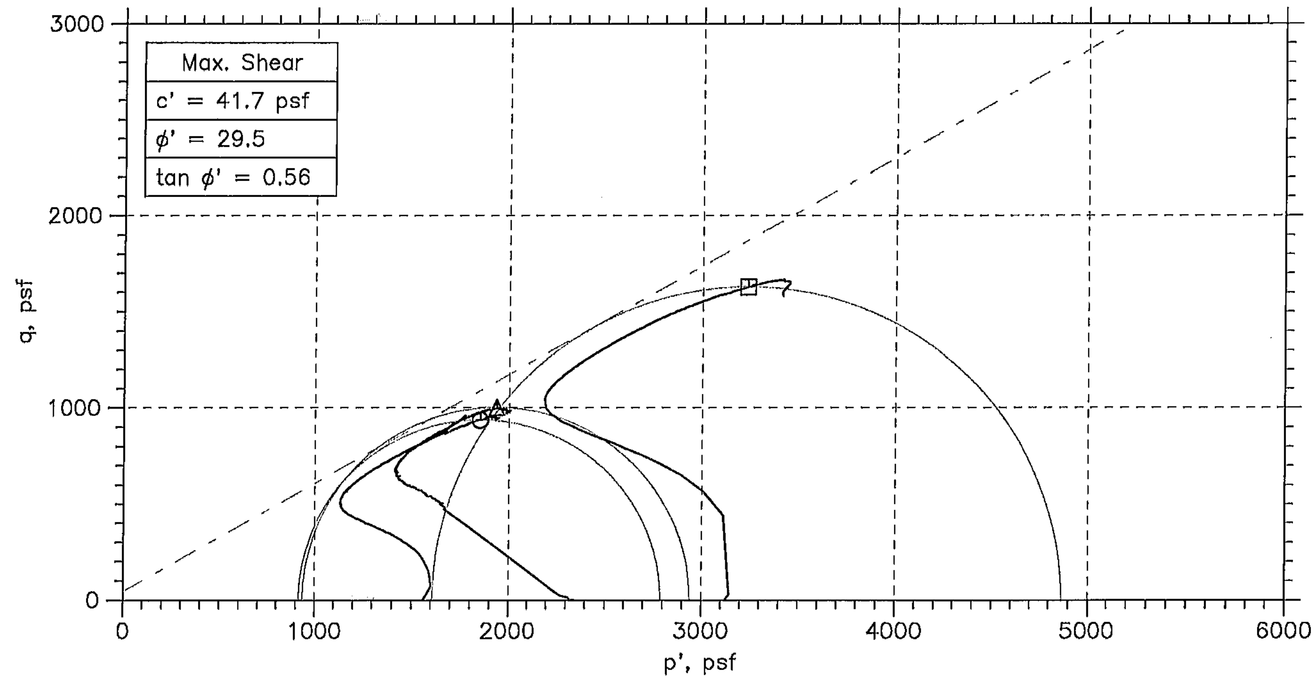
GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Tested By: md	Checked By: jdt
	Sample No.: 0318-09	Test Date: 07/30/07	Depth: 24-26 ft
	Test No.: C-39	Sample Type: tube	Elevation: ---
	Description: Moist, dark greenish gray silt		
	Remarks: System Q		

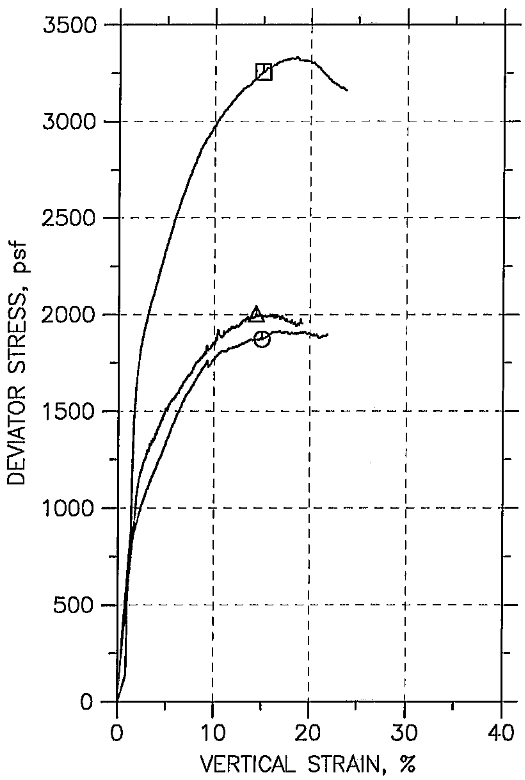
Mon, 27-AUG-2007 12:18:19

CONSOLIDATED

UNDRAINED (CU) DATA

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

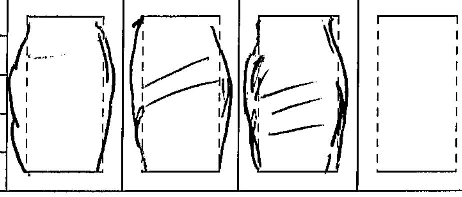




Symbol		○	△	□	
Sample No.		0317-02	0317-02	0317-02	
Test No.		CU-17-1	CU-17-2	CU-17-3	
Depth		40-42 ft.	40-42 ft	40-42 ft	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	5.9	6	6	
	Water Content, %	29.2	25.0	28.4	
	Dry Density, pcf	76.88	95.48	92.27	
	Saturation, %	65.5	86.9	91.5	
	Void Ratio	1.22	0.785	0.847	
Before Shear	Water Content, %	22.8	22.0	21.3	
	Dry Density, pcf	105.1	106.4	107.8	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.621	0.601	0.581	
	Back Press., psf	17820	3599	10080	
Ver. Eff. Cons. Stress, psf		1561	2343	3123	
Shear Strength, psf		936.3	1001	1628	
Strain at Failure, %		15	14.4	15	
Strain Rate, %/min		0.008	0.008	0.008	
B-Value		0.92	0.96	0.95	
Measured Specific Gravity		2.73	2.73	2.73	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga
Location: Syracuse NY
Project No.: GTX-7143
Boring No.: 10121
Sample Type: tube

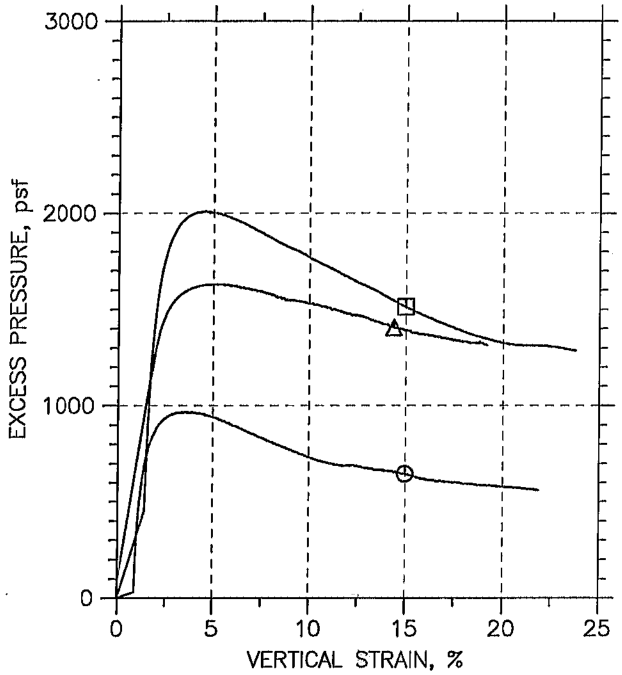


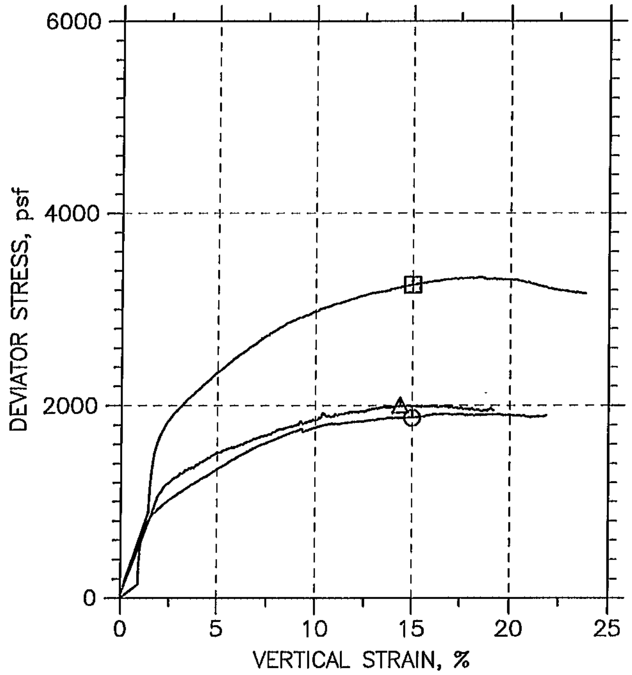
Description: Moist, brown silt
Remarks: System E

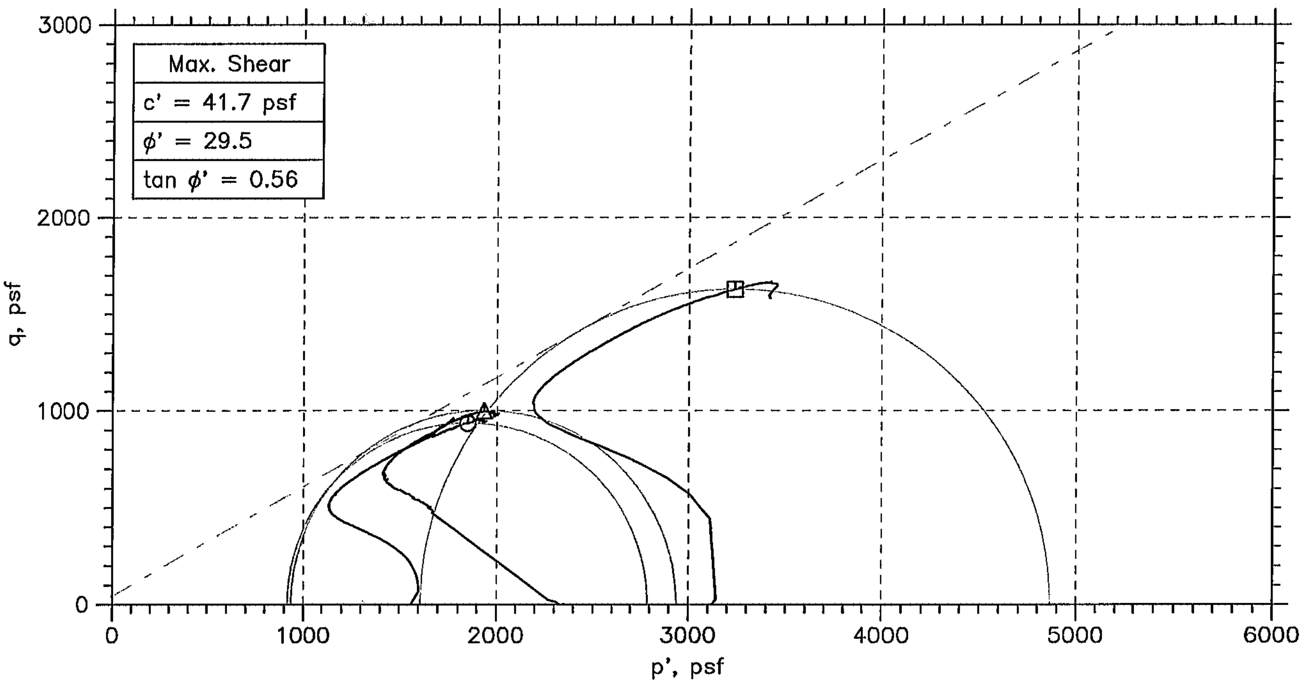
Phase calculations based on start and end of test.
* Saturation is set to 100% for phase calculations.

Fri, 29-JUN-2007 13:49:45

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







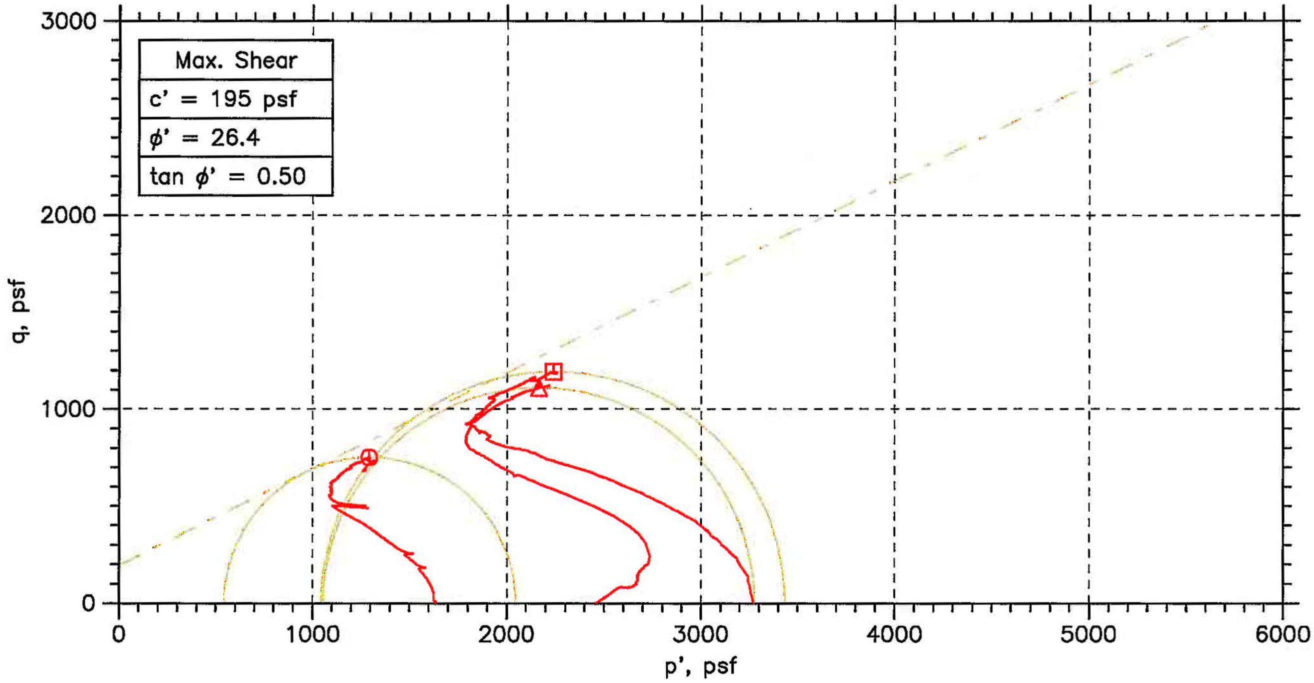
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
○	0317-02	CU-17-1	40-42 ft.	md	06/22/07	jdt		7143-CU-17-1n.dat
△	0317-02	CU-17-2	40-42 ft	njh	06/15/07	jdt		7143-CU-17-2n.dat
□	0317-02	CU-17-3	40-42 ft	njh	06/14/07	jdt		7143-CU-17-3n.dat

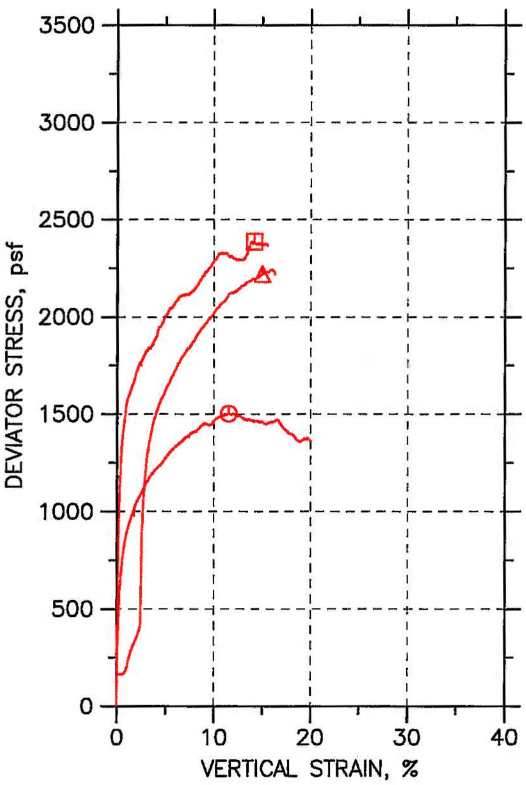
GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
Boring No.: 10121	Sample Type: tube	
Description: Moist, brown silt		
Remarks: System E		

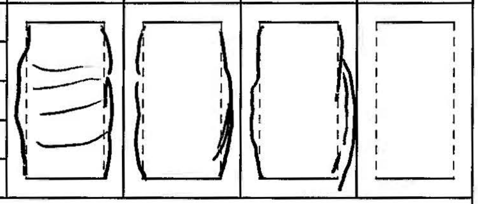
Fri, 29-JUN-2007 13:49:53

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		○	△	□	
Sample No.		0317-03	0317-03	0317-03	
Test No.		CU-18-1	CU-18-2	CU-18-3	
Depth		42-44 ft	42-44 ft	42-44 ft	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	6	6	6.1	
	Water Content, %	49.4	47.6	31.6	
	Dry Density, pcf	70.89	73.75	90.97	
	Saturation, %	96.8	99.9	100.0	
	Void Ratio	1.38	1.29	0.853	
Before Shear	Water Content, %	42.7	33.1	29.1	
	Dry Density, pcf	78.34	89.04	94.34	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	1.15	0.893	0.787	
	Back Press., psf	4031	23440	4034	
Ver. Eff. Cons. Stress, psf		1636	2455	3271	
Shear Strength, psf		751.4	1110	1194	
Strain at Failure, %		11.5	15	14.2	
Strain Rate, %/min		0.003	0.003	0.003	
B-Value		1.02	0.93	0.97	
Estimated Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	



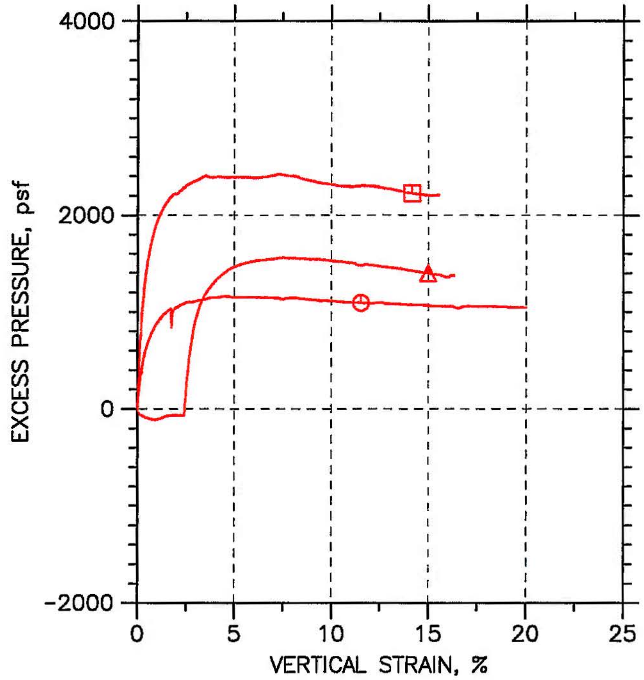
GeoTesting express
a subsidiary of Geocomp Corporation

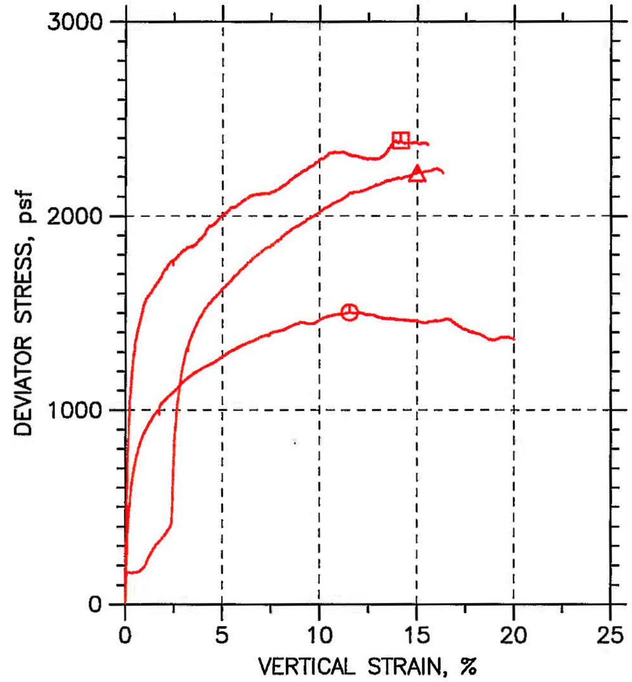
Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 10124
Sample Type: tube
Description: Wet, grayish brown silt
Remarks: System K

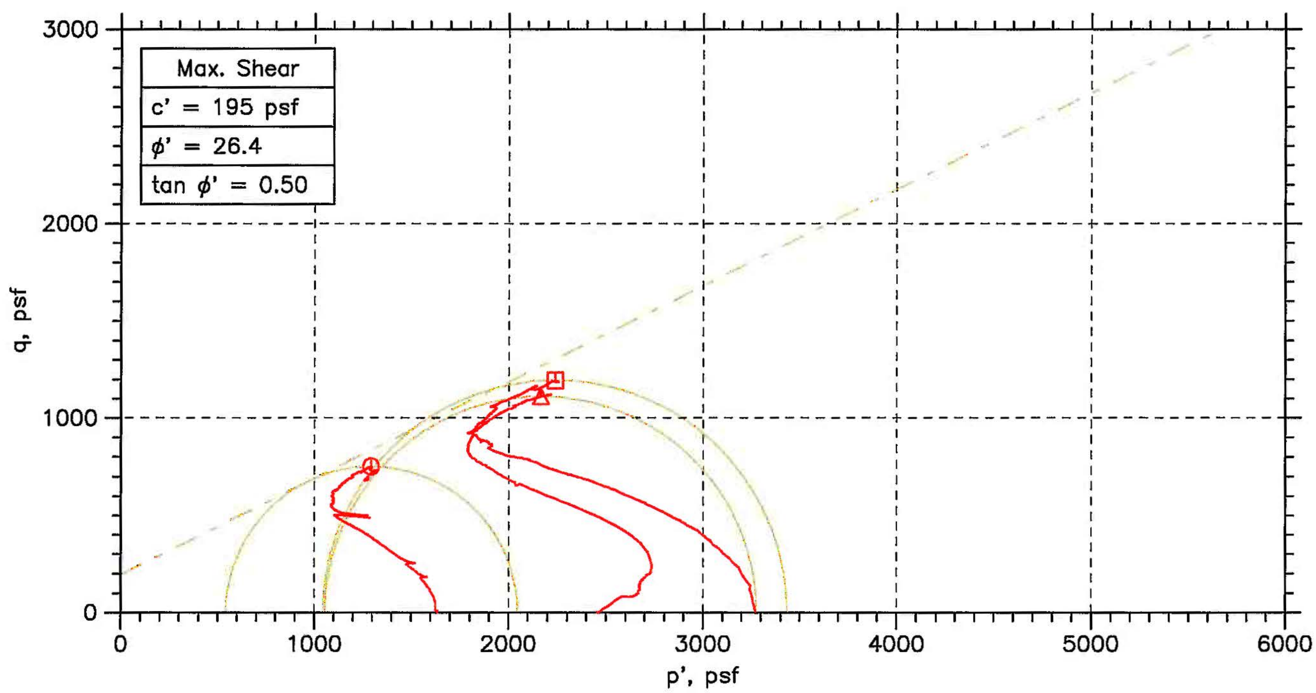
Fri, 13-JUL-2007 14:55:17

Phase calculations based on start and end of test.
* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







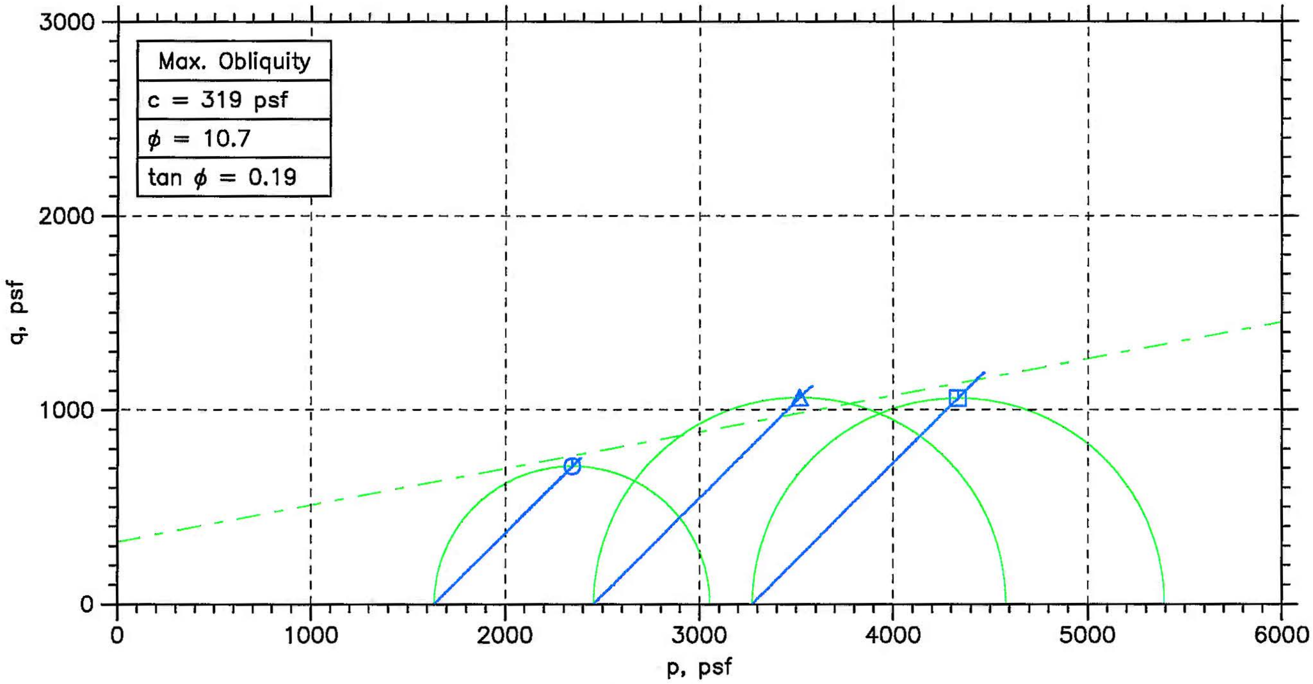
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
○	0317-03	CU-18-1	42-44 ft	njh	06/25/07	jdt		7143-CU-18-1n.dat
△	0317-03	CU-18-2	42-44 ft	njh	06/25/07	jdt		7143-cu-18-2n.dat
□	0317-03	CU-18-3	42-44 ft	njh	06/20/07	jdt		7143-CU-18-3n.dat

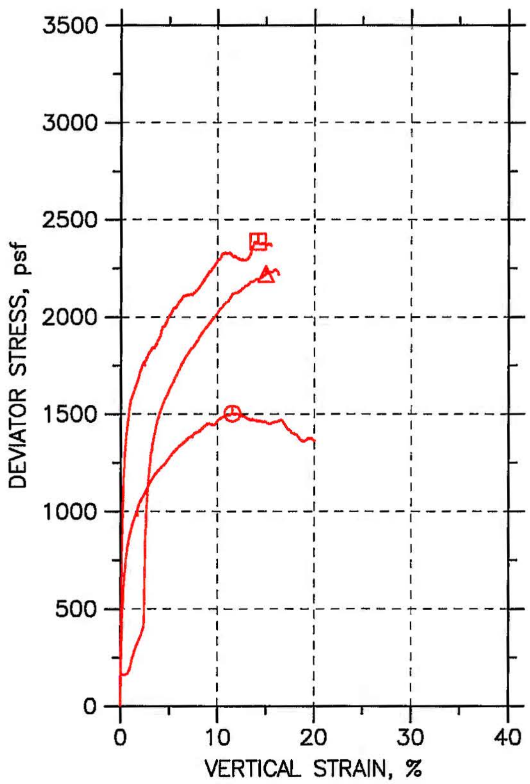
GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 10124	Sample Type: tube	
Description: Wet, grayish brown silt		
Remarks: System K		

Fri, 13-JUL-2007 14:55:25

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

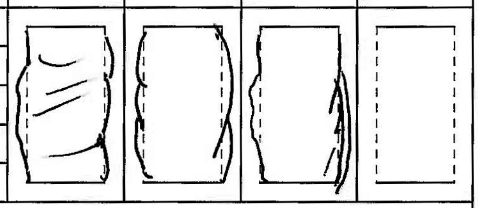




Symbol		○	△	□	
Sample No.		0317-03	0317-03	0317-03	
Test No.		CU-18-1	CU-18-2	CU-18-3	
Depth		42-44 ft	42-44 ft	42-44 ft	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	6	6	6.1	
	Water Content, %	49.4	47.6	31.6	
	Dry Density, pcf	70.89	73.75	90.97	
	Saturation, %	96.8	99.9	100.0	
	Void Ratio	1.38	1.29	0.853	
Before Shear	Water Content, %	42.7	33.1	29.1	
	Dry Density, pcf	78.34	89.04	94.34	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	1.15	0.893	0.787	
	Back Press., psf	4031	23440	4034	
Ver. Eff. Cons. Stress, psf		1636	2455	3271	
Shear Strength, psf		751.4	1110	1194	
Strain at Failure, %		11.5	15	14.2	
Strain Rate, %/min		0.003	0.003	0.003	
B-Value		1.02	0.93	0.97	
Estimated Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 10124
Sample Type: tube



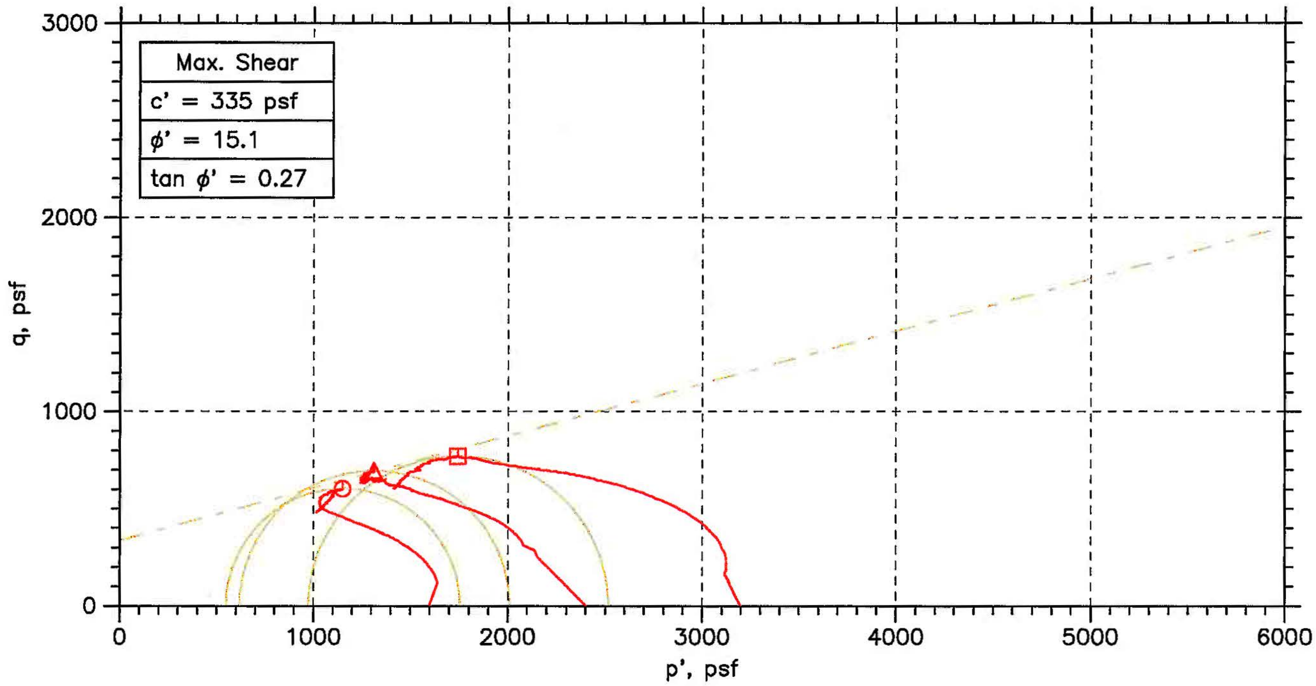
Description: Wet, grayish brown silt
Remarks: System K

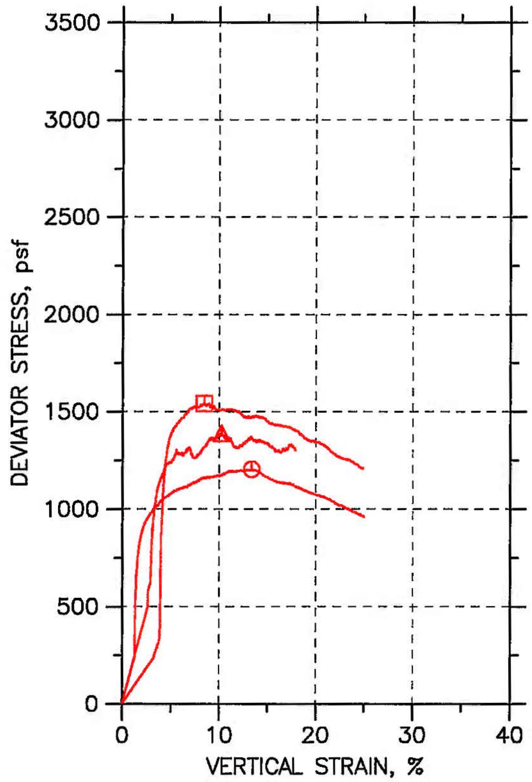
Fri, 13-JUL-2007 15:24:04

Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

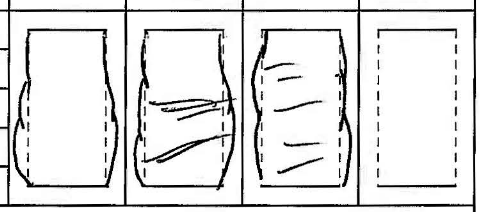




Symbol		○	△	□	
Sample No.		0317-04	0317-04	0317-04	
Test No.		CU-19-1	CU-19-2	CU-19-3	
Depth		41-43 ft.	41-43 ft	41-43 ft.	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	6.03	5.9	6.01	
	Water Content, %	34.1	29.9	39.2	
	Dry Density, pcf	87.74	87.44	79.13	
	Saturation, %	100.0	87.0	93.6	
	Void Ratio	0.921	0.928	1.13	
Before Shear	Water Content, %	27.0	28.6	30.5	
	Dry Density, pcf	97.5	95.13	92.44	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.729	0.772	0.823	
	Back Press., psf	20880	15700	21310	
Ver. Eff. Cons. Stress, psf		1597	2399	3198	
Shear Strength, psf		602.7	695.	770.4	
Strain at Failure, %		13.4	10.2	8.46	
Strain Rate, %/min		0.005	0.005	0.005	
B-Value		0.94	0.95	0.94	
Estimated Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga
Location: Syracuse NY
Project No.: GTX-7143
Boring No.: 20056
Sample Type: tube
Description: Moist, brown silt
Remarks: System E

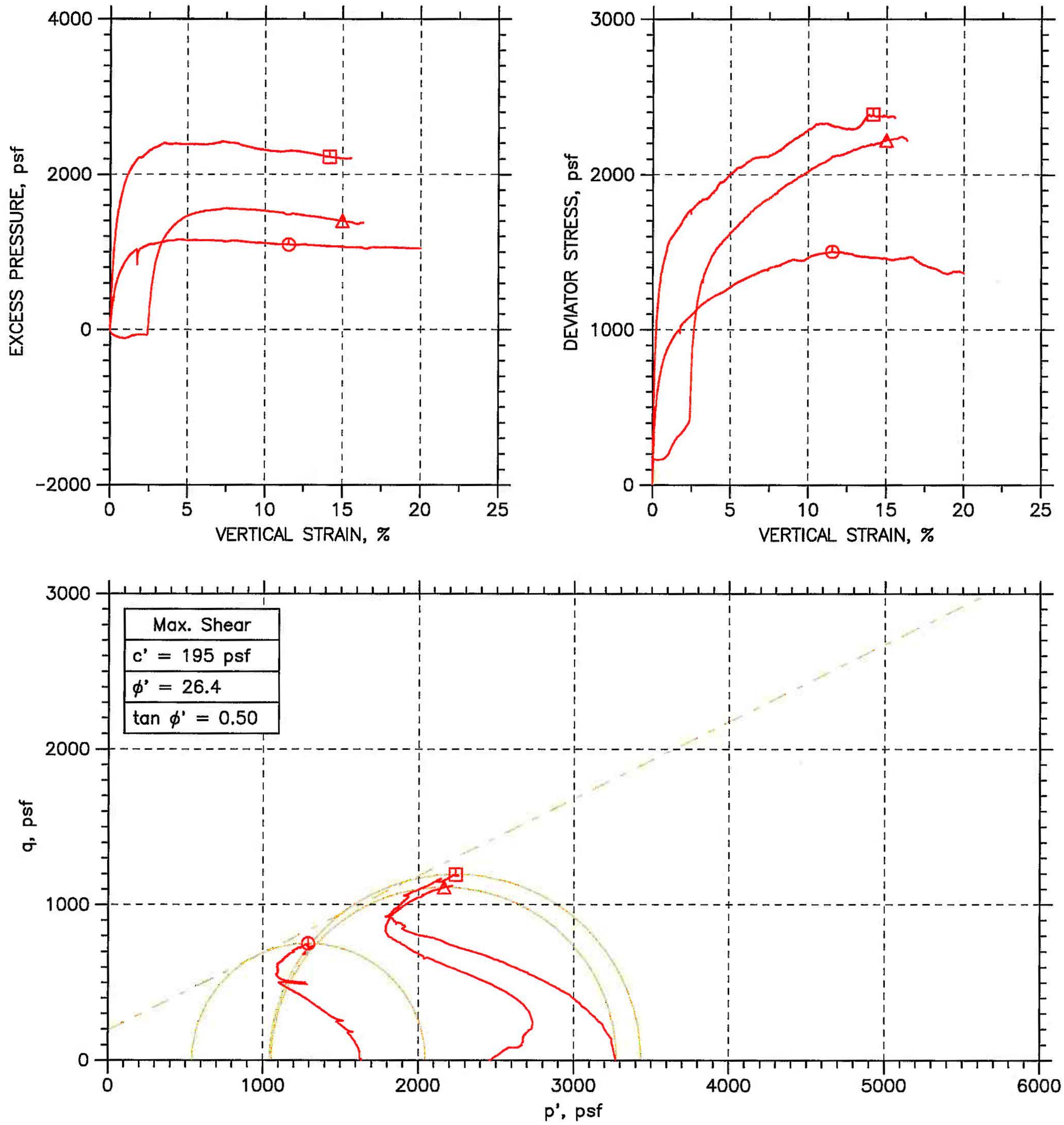


Fri, 13-JUL-2007 14:47:29

Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



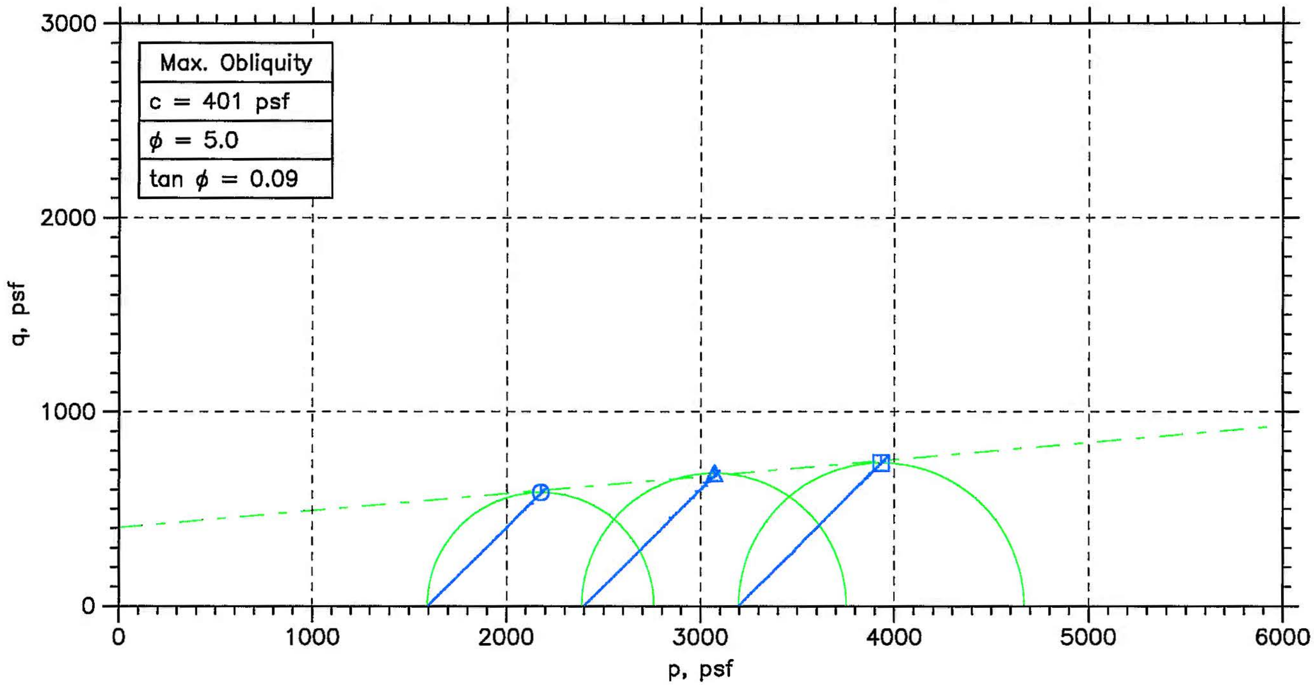
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
○	0317-03	CU-18-1	42-44 ft	njh	06/25/07	jdt		7143-CU-18-1n.dat
△	0317-03	CU-18-2	42-44 ft	njh	06/25/07	jdt		7143-cu-18-2n.dat
□	0317-03	CU-18-3	42-44 ft	njh	06/20/07	jdt		7143-CU-18-3n.dat

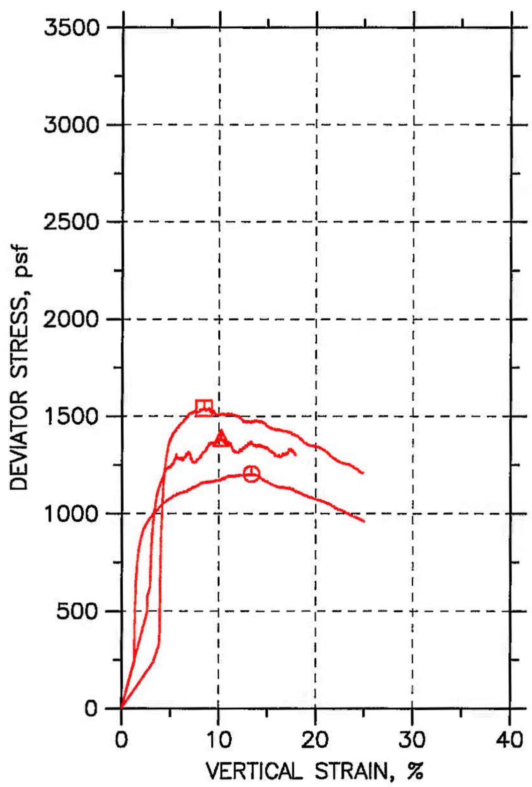
GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 10124	Sample Type: tube	
Description: Wet, grayish brown silt		
Remarks: System K		

Fri, 13-JUL-2007 14:03:10

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

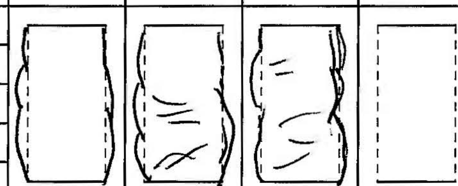




Symbol		○	△	□	
Sample No.		0317-04	0317-04	0317-04	
Test No.		CU-19-1	CU-19-2	CU-19-3	
Depth		41-43 ft.	41-43 ft	41-43 ft.	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	6.03	5.9	6.01	
	Water Content, %	34.1	29.9	39.2	
	Dry Density, pcf	87.74	87.44	79.13	
	Saturation, %	100.0	87.0	93.6	
	Void Ratio	0.921	0.928	1.13	
Before Shear	Water Content, %	27.0	28.6	30.5	
	Dry Density, pcf	97.5	95.13	92.44	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.729	0.772	0.823	
	Back Press., psf	20880	15700	21310	
Ver. Eff. Cons. Stress, psf		1597	2399	3198	
Shear Strength, psf		602.7	695.	770.4	
Strain at Failure, %		13.4	10.2	8.46	
Strain Rate, %/min		0.005	0.005	0.005	
B-Value		0.94	0.95	0.94	
Estimated Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	
Location: Syracuse NY	
Project No.: GTX-7143	
Boring No.: 20056	
Sample Type: tube	
Description: Moist, brown silt	
Remarks: System E	

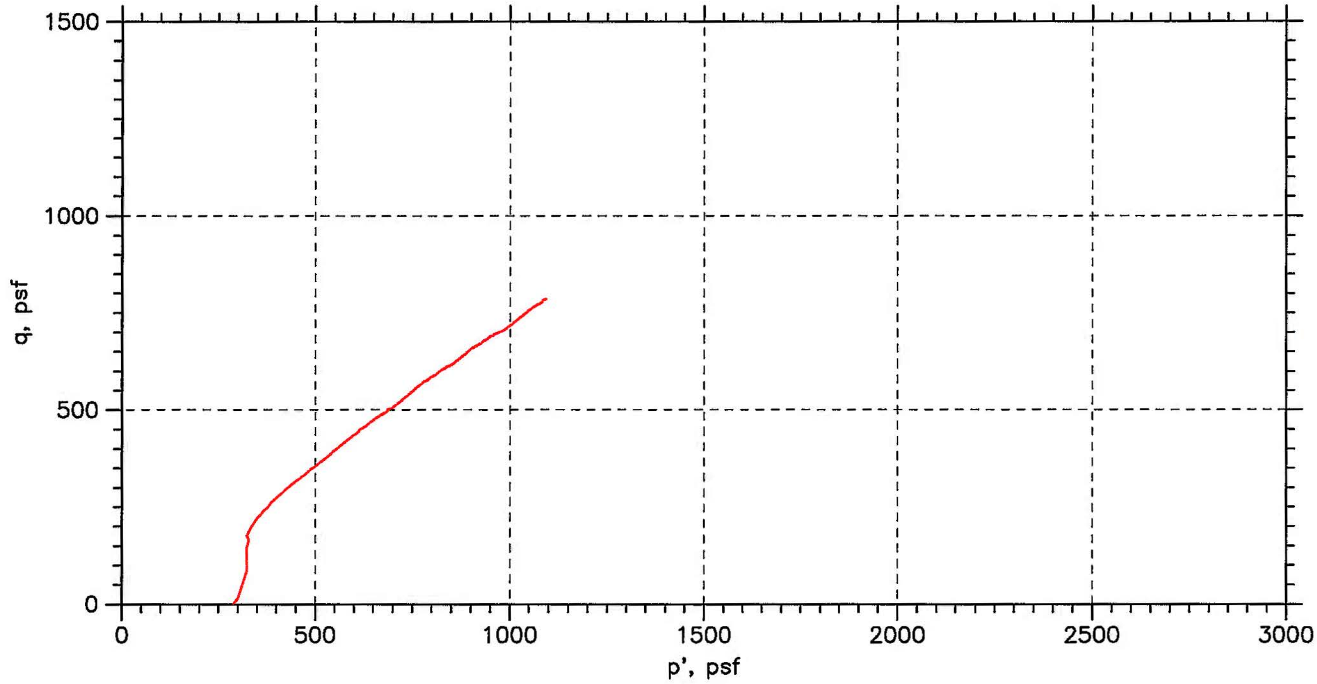


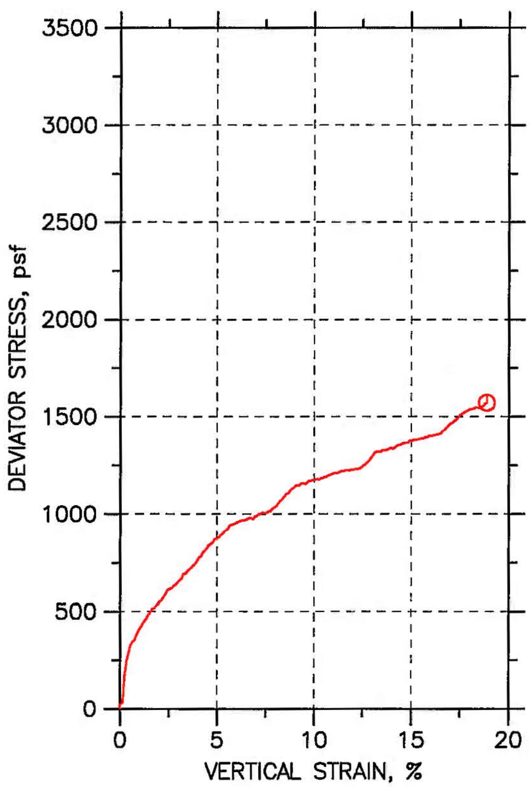
Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

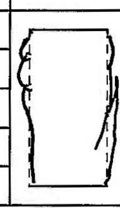
Fri, 13-JUL-2007 15:24:53

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		O				
Sample No.		0317-12				
Test No.		CU-21-1				
Depth		0-2 ft				
Initial	Diameter, in	2.87				
	Height, in	5.76				
	Water Content, %	56.6				
	Dry Density, pcf	54.39				
	Saturation, %	72.8				
	Void Ratio	2.1				
Before Shear	Water Content, %	48.0				
	Dry Density, pcf	73.39				
	Saturation*, %	100.0				
	Void Ratio	1.3				
	Back Press., psf	6912				
Ver. Eff. Cons. Stress, psf		287.3				
Shear Strength, psf		785.6				
Strain at Failure, %		18.9				
Strain Rate, %/min		0.05				
B-Value		0.95				
Estimated Specific Gravity		2.7				
Liquid Limit		---				
Plastic Limit		---				



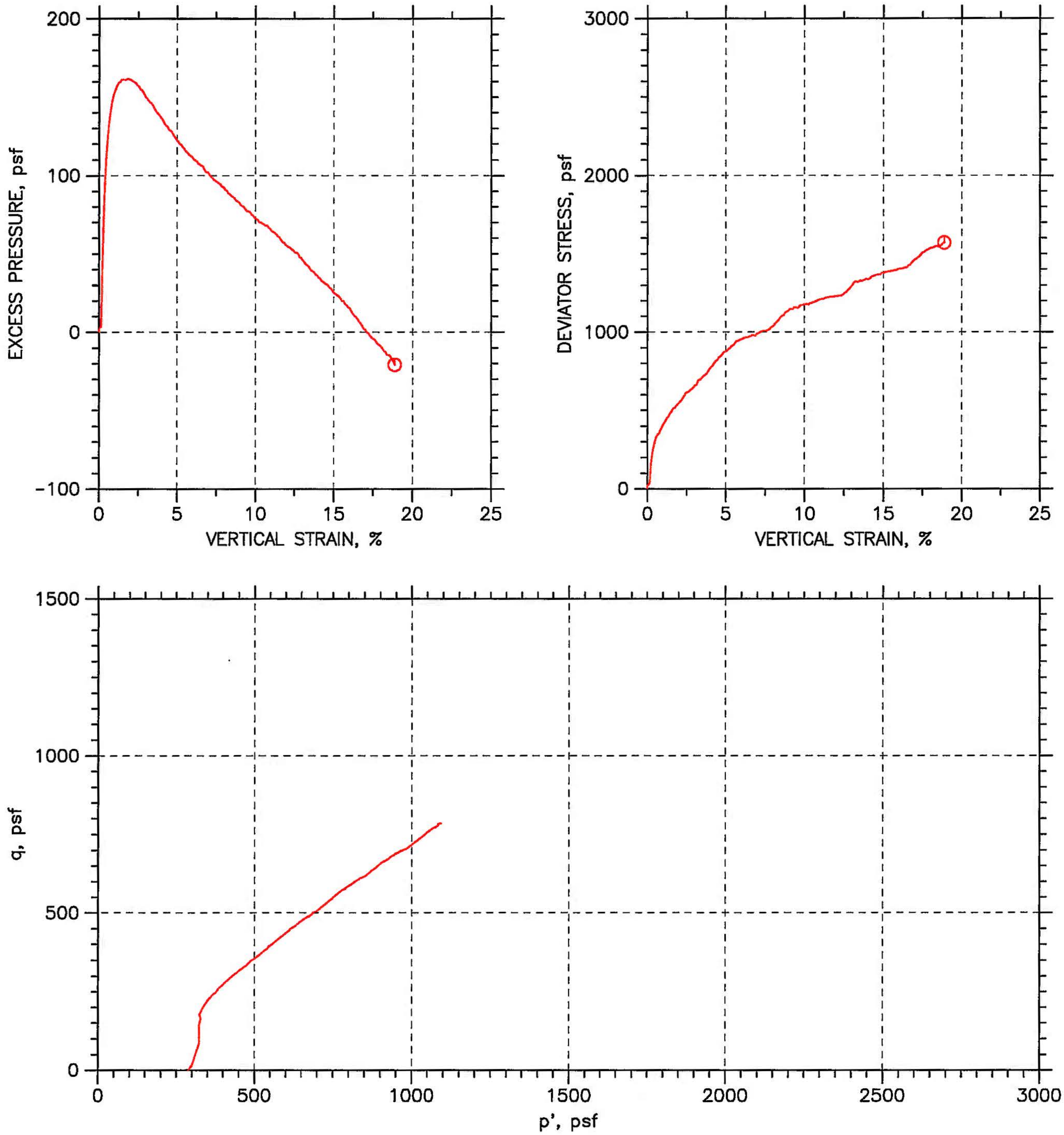
GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga				
	Location: Syracuse, NY				
	Project No.: GTX-7143				
	Boring No.: 20034				
	Sample Type: tube				
	Description: Moist, light gray silt				
	Remarks: System B				

Fri, 13-JUL-2007 15:16:27

Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767



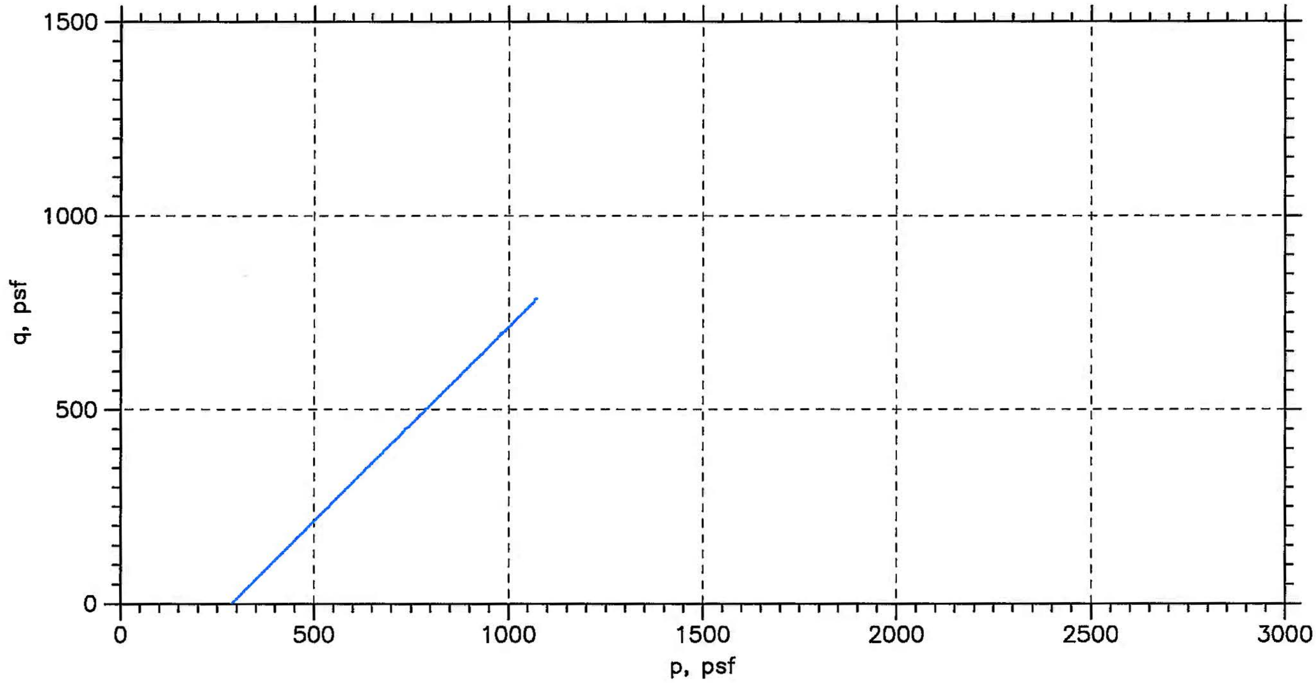
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	0317-12	CU-21-1	0-2 ft	njh	07/10/07	jdt		7143-CU-21-1n.dat

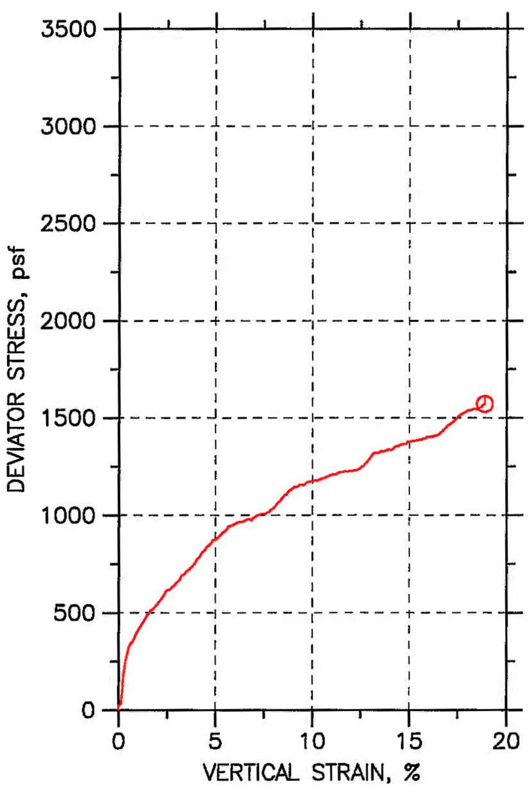
GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 20034	Sample Type: tube	
Description: Moist, light gray silt		
Remarks: System B		

Fri, 13-JUL-2007 15:16:35

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⊙				
Sample No.		0317-12				
Test No.		CU-21-1				
Depth		0-2 ft				
Initial	Diameter, in	2.87				
	Height, in	5.76				
	Water Content, %	56.6				
	Dry Density, pcf	54.39				
	Saturation, %	72.8				
	Void Ratio	2.1				
Before Shear	Water Content, %	48.0				
	Dry Density, pcf	73.39				
	Saturation*, %	100.0				
	Void Ratio	1.3				
	Back Press., psf	6912				
Ver. Eff. Cons. Stress, psf		287.3				
Shear Strength, psf		785.6				
Strain at Failure, %		18.9				
Strain Rate, %/min		0.05				
B-Value		0.95				
Estimated Specific Gravity		2.7				
Liquid Limit		---				
Plastic Limit		---				

GeoTesting express
a subsidiary of Geocomp Corporation

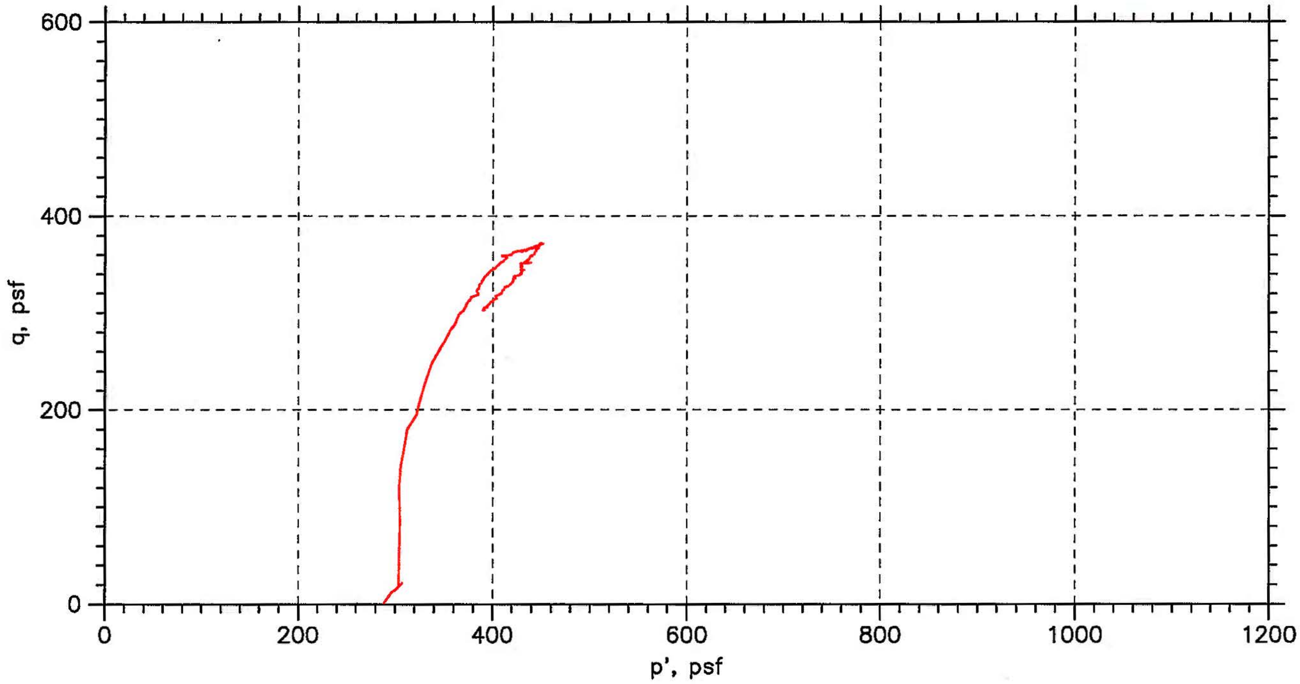
Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20034
Sample Type: tube

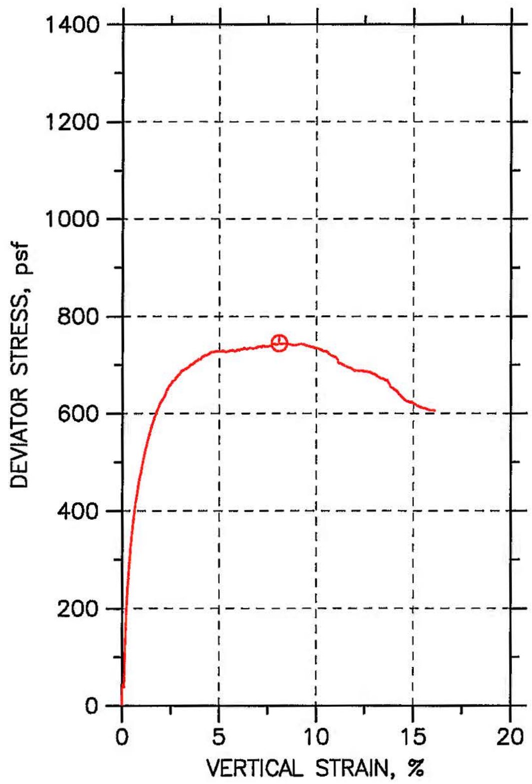
Description: Moist, light gray silt
Remarks: System B

Phase calculations based on start and end of test.
* Saturation is set to 100% for phase calculations.

Fri, 13-JUL-2007 15:17:03

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

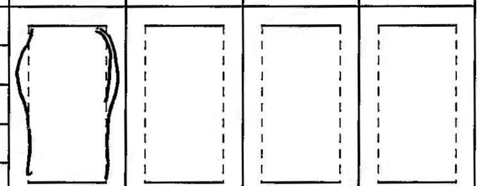




Symbol		O			
Sample No.		0318-13			
Test No.		CU-22-1			
Depth		4-6 ft			
Initial	Diameter, in	2.87			
	Height, in	6			
	Water Content, %	230.6			
	Dry Density, pcf	23.3			
	Saturation, %	99.9			
	Void Ratio	6.23			
Before Shear	Water Content, %	202.0			
	Dry Density, pcf	26.11			
	Saturation*, %	100.0			
	Void Ratio	5.46			
	Back Press., psf	8640			
Ver. Eff. Cons. Stress, psf		295.5			
Shear Strength, psf		372.3			
Strain at Failure, %		8.1			
Strain Rate, %/min		0.04			
B-Value		0.95			
Estimated Specific Gravity		2.7			
Liquid Limit		---			
Plastic Limit		---			

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20054
Sample Type: tube

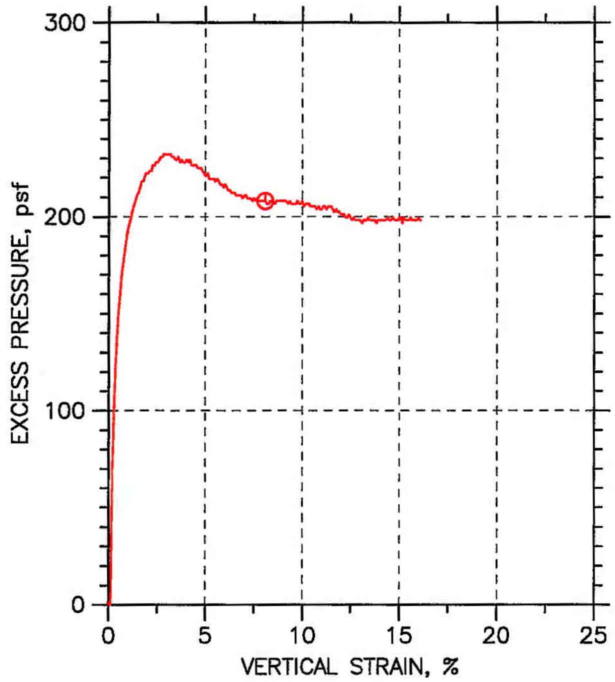


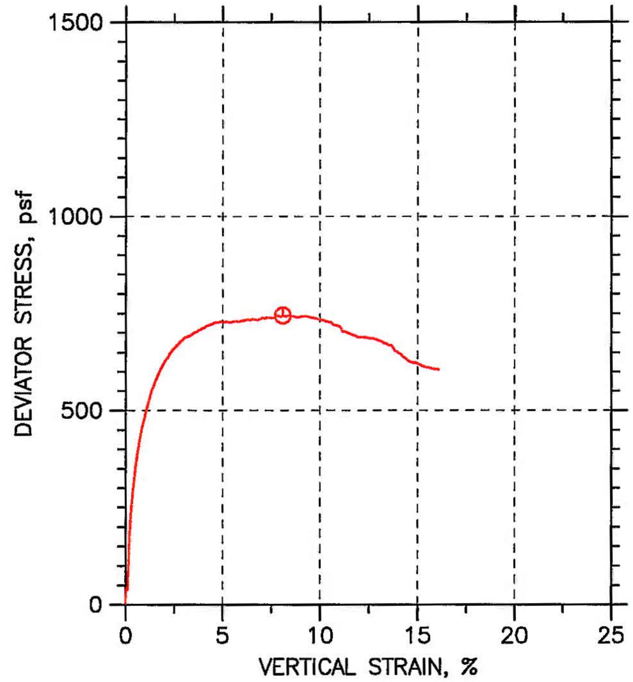
Description: Moist, gray silt
Remarks: System O

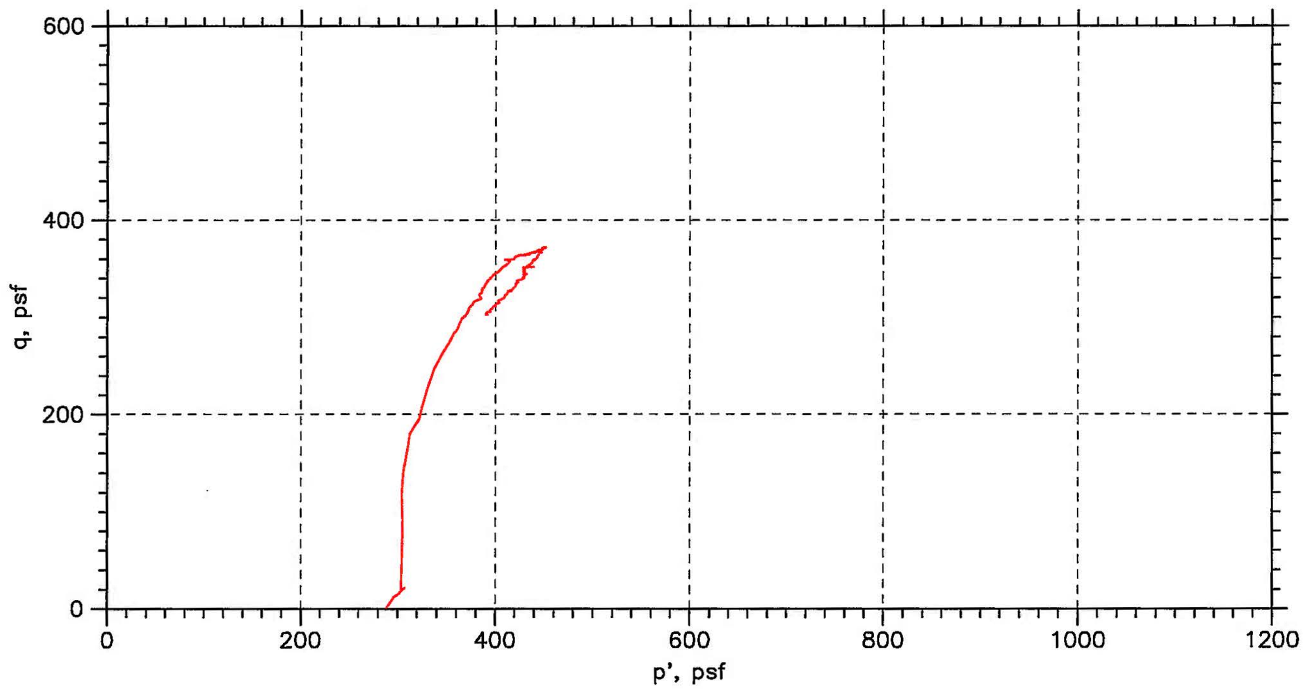
Fri, 13-JUL-2007 15:21:14

Phase calculations based on start and end of test.
* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







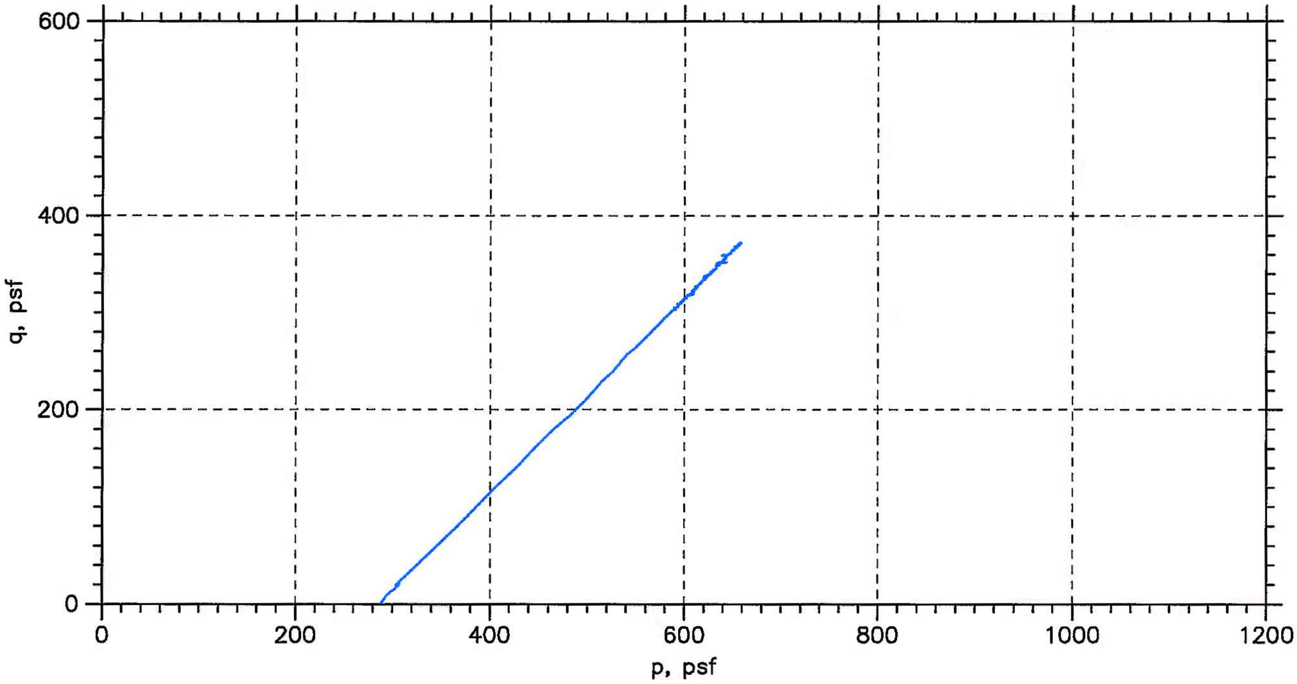
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊕	0318-13	CU-22-1	4-6 ft	njh	07/10/07	jdt		7143-CU-22-1n.dat

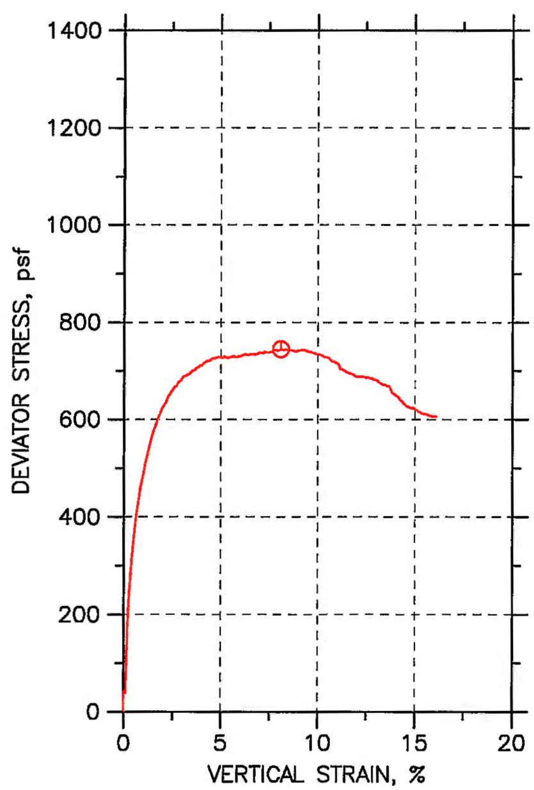
GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 20054	Sample Type: tube	
Description: Moist, gray silt		
Remarks: System 0		

Fri, 13-JUL-2007 15:21:21

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

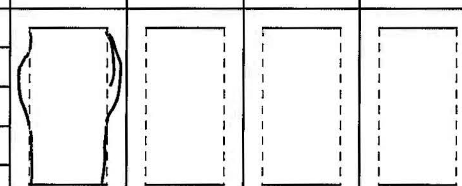




Symbol		⊙			
Sample No.		0318-13			
Test No.		CU-22-1			
Depth		4-6 ft			
Initial	Diameter, in	2.87			
	Height, in	6			
	Water Content, %	230.6			
	Dry Density, pcf	23.3			
	Saturation, %	99.9			
	Void Ratio	6.23			
Before Shear	Water Content, %	202.0			
	Dry Density, pcf	26.11			
	Saturation*, %	100.0			
	Void Ratio	5.46			
	Back Press., psf	8640			
Ver. Eff. Cons. Stress, psf		295.5			
Shear Strength, psf		372.3			
Strain at Failure, %		8.1			
Strain Rate, %/min		0.04			
B-Value		0.95			
Estimated Specific Gravity		2.7			
Liquid Limit		---			
Plastic Limit		---			

GeoTesting express
a subsidiary of Geocomp Corporation

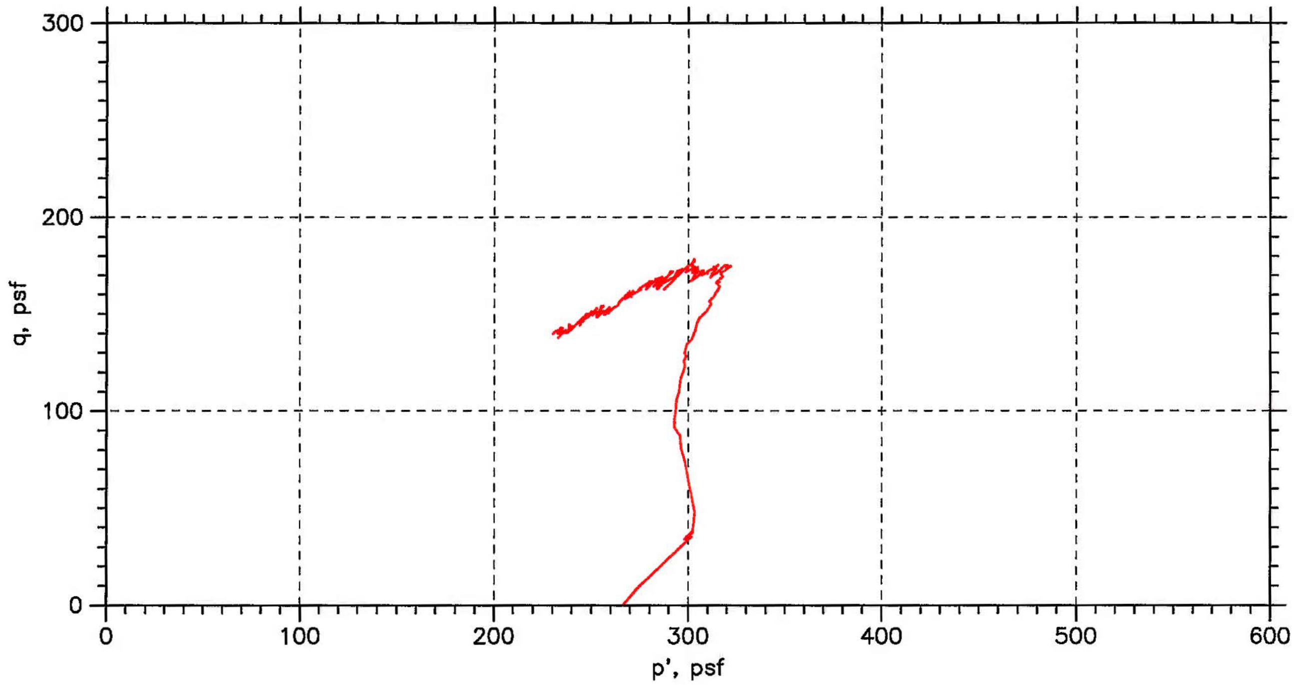
Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20054
Sample Type: tube
Description: Moist, gray silt
Remarks: System O

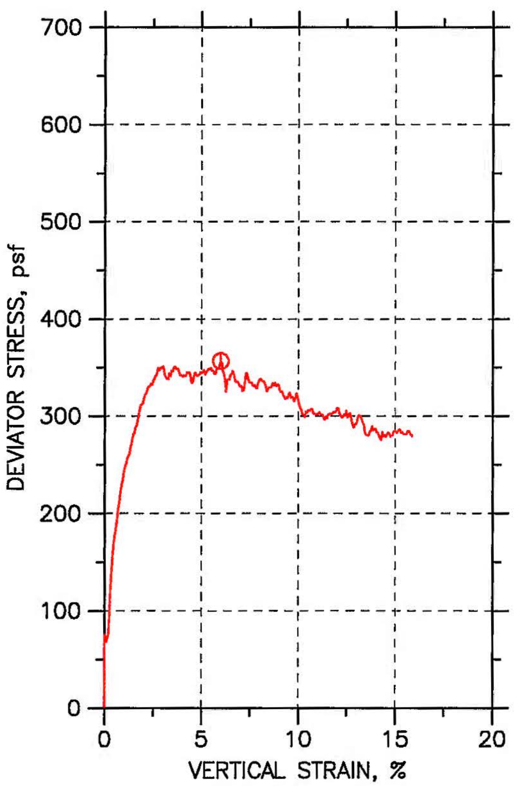


Phase calculations based on start and end of test.
* Saturation is set to 100% for phase calculations.

Fri, 13-JUL-2007 15:21:33

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⏀			
Sample No.		0317-19			
Test No.		CU-23-1			
Depth		6-8 ft			
Initial	Diameter, in	2.87			
	Height, in	6.01			
	Water Content, %	108.7			
	Dry Density, pcf	40.7			
	Saturation, %	93.4			
	Void Ratio	3.14			
Before Shear	Water Content, %	90.7			
	Dry Density, pcf	48.88			
	Saturation*, %	100.0			
	Void Ratio	2.45			
	Back Press., psf	6480			
Ver. Eff. Cons. Stress, psf		266.4			
Shear Strength, psf		178.4			
Strain at Failure, %		5.99			
Strain Rate, %/min		0.03			
B-Value		0.96			
Estimated Specific Gravity		2.7			
Liquid Limit		---			
Plastic Limit		---			

GeoTesting express
a subsidiary of Geocomp Corporation

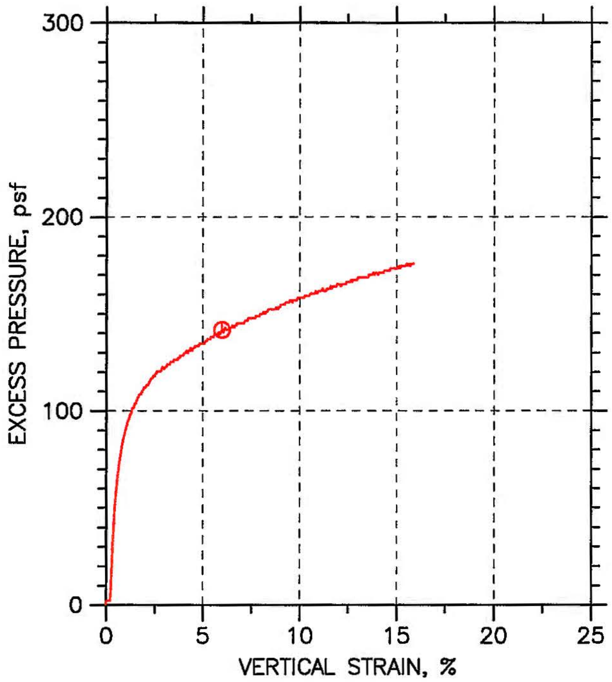
Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20036
Sample Type: tube
Description: Moist, black silt
Remarks: System F

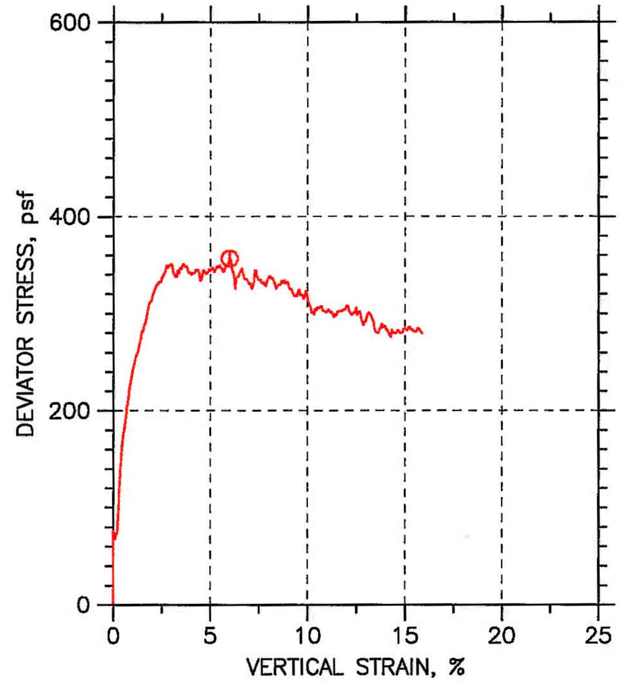
Phase calculations based on start and end of test.

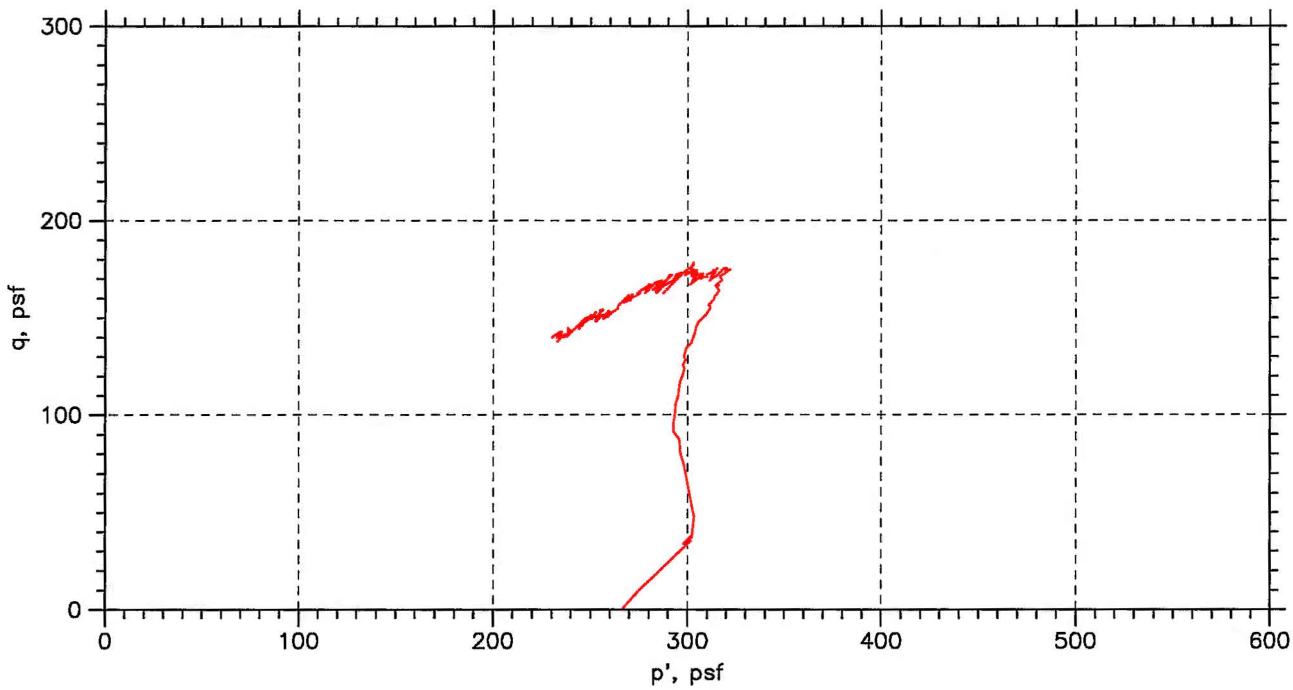
* Saturation is set to 100% for phase calculations.

Fri, 13-JUL-2007 15:22:48

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







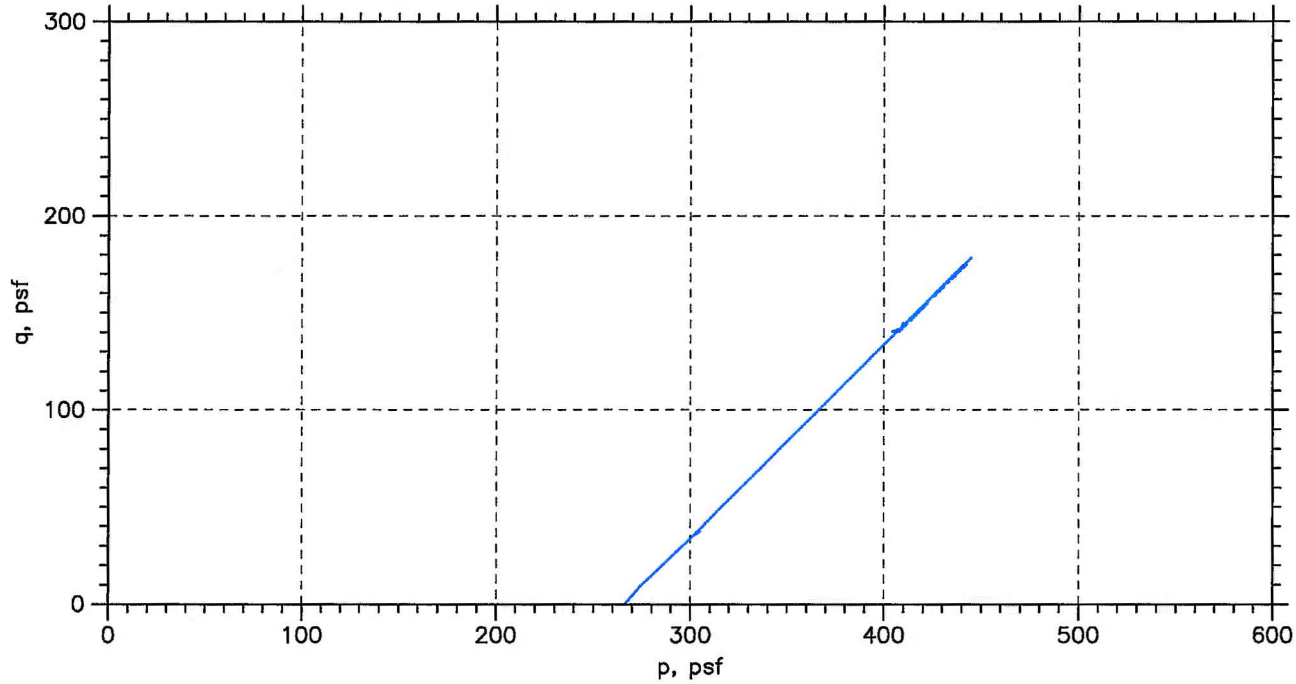
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊕	0317-19	CU-23-1	6-8 ft	njh	07/10/07	jdt		7143-CU-23-1.dat

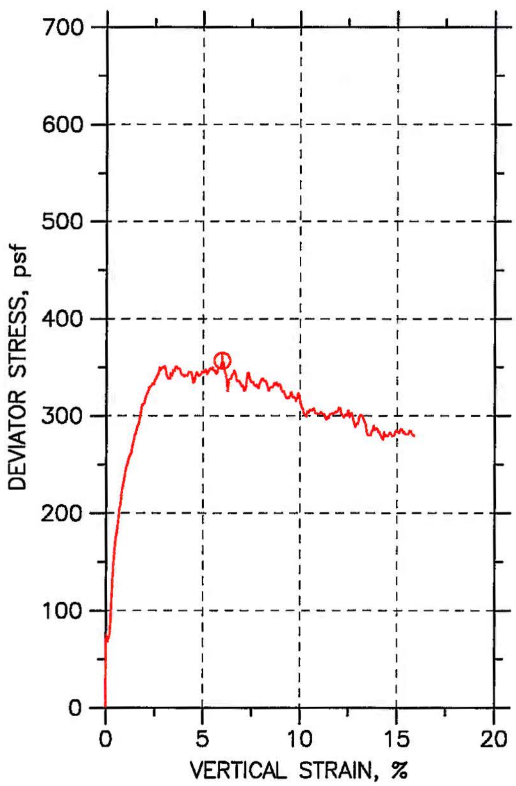
GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 20036	Sample Type: tube	
Description: Moist, black silt		
Remarks: System F		

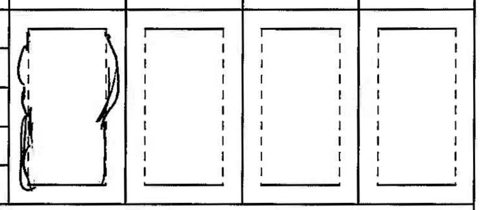
Fri, 13-JUL-2007 15:22:54

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⦶				
Sample No.		0317-19				
Test No.		CU-23-1				
Depth		6-8 ft				
Initial	Diameter, in	2.87				
	Height, in	6.01				
	Water Content, %	108.7				
	Dry Density, pcf	40.7				
	Saturation, %	93.4				
	Void Ratio	3.14				
Before Shear	Water Content, %	90.7				
	Dry Density, pcf	48.88				
	Saturation*, %	100.0				
	Void Ratio	2.45				
	Back Press., psf	6480				
Ver. Eff. Cons. Stress, psf		266.4				
Shear Strength, psf		178.4				
Strain at Failure, %		5.99				
Strain Rate, %/min		0.03				
B-Value		0.96				
Estimated Specific Gravity		2.7				
Liquid Limit		---				
Plastic Limit		---				



GeoTesting express, a subsidiary of Geocomp Corporation	Project: Onondaga
	Location: Syracuse, NY
	Project No.: GTX-7143
	Boring No.: 20036
	Sample Type: tube
	Description: Moist, black silt
	Remarks: System F

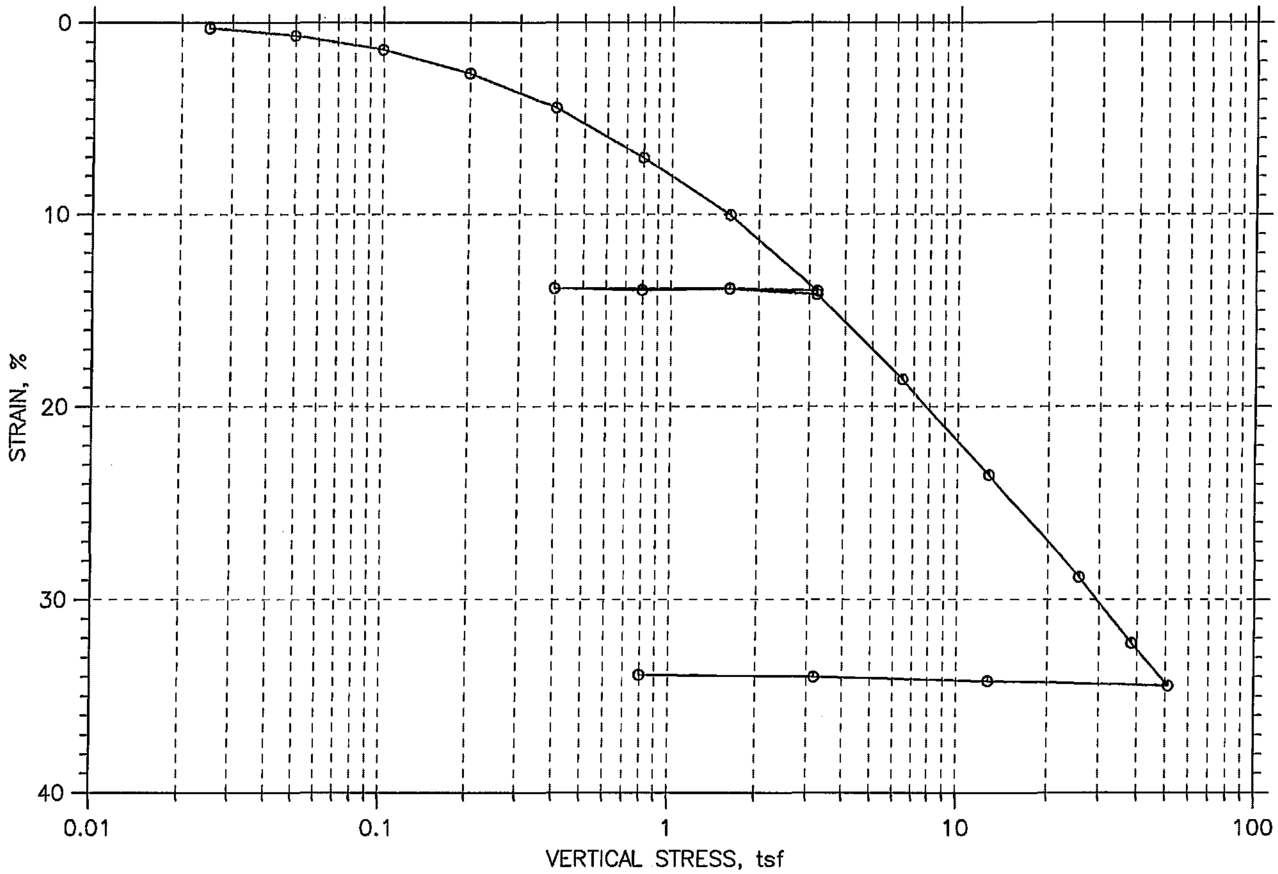
Fri, 13-JUL-2007 15:23:06

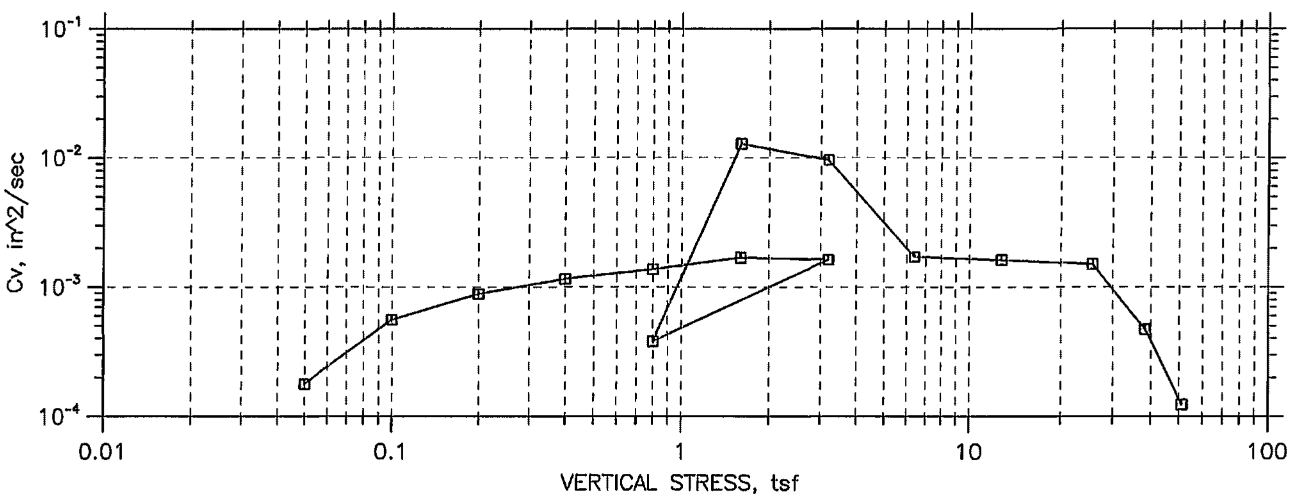
Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

CONSOLIDATION TEST DATA

SUMMARY REPORT



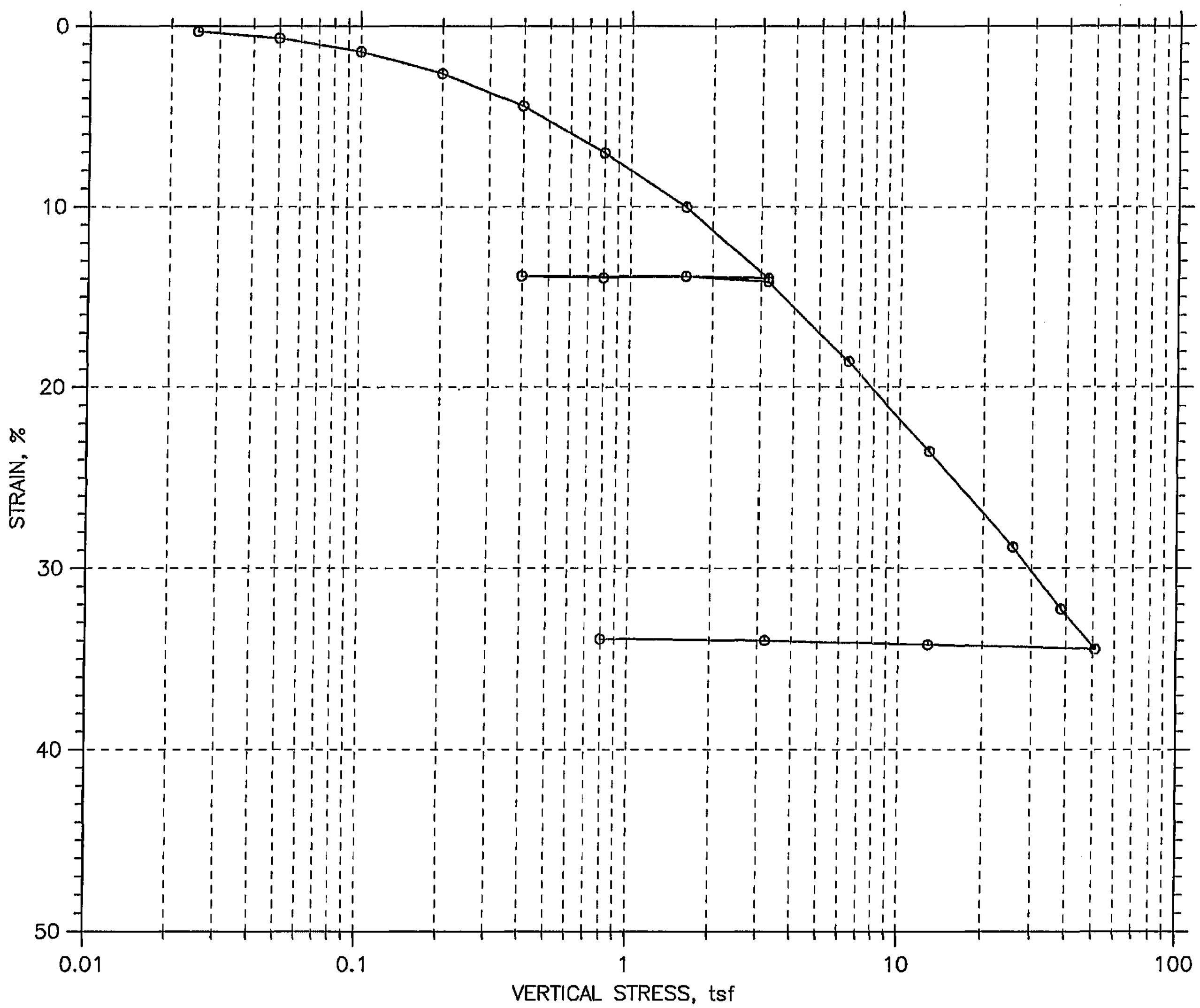


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

Mon, 16-JUL-2007 12:35:26

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	65.87	36.28
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	54.17	81.95
Compression Index: ---				Saturation, %	87.43	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	1.89	0.91
LL: ---	PL: ---	PI: ---	GS: 2.51			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

Mon, 16-JUL-2007 12:35:28

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20034
Sample No.: 0317-12
Test No.: C-32

Location: Syracuse NY
Tested By: md
Test Date: 06/14/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 0-2 ft
Elevation: ---

Soil Description: Moist, gray silt
Remarks: System R

Estimated Specific Gravity: 2.51
Initial Void Ratio: 1.89
Final Void Ratio: 0.91

Liquid Limit: ---
Plastic Limit: ---
Plasticity Index: ---

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	SSP-8	RING		thread
Wt. Container + Wet Soil, gm	239.55	225.02	204.36	103.45
Wt. Container + Dry Soil, gm	156.25	179.04	179.04	78.09
Wt. Container, gm	9.04	109.24	109.24	8.18
Wt. Dry Soil, gm	147.21	69.8	69.8	69.91
Water Content, %	56.59	65.87	36.28	36.28
Void Ratio	---	1.89	0.91	---
Degree of Saturation, %	---	87.43	100.00	---
Dry Unit Weight, pcf	---	54.171	81.951	---

Note: Specific Gravity and Void Ratios are calculated assuming the degree of saturation equals 100% at the end of the test. Therefore, values may not represent actual values for the specimen.

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20034
Sample No.: 0317-12
Test No.: C-32

Location: Syracuse NY
Tested By: md
Test Date: 06/14/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 0-2 ft
Elevation: ---

Soil Description: Moist, gray silt
Remarks: System R

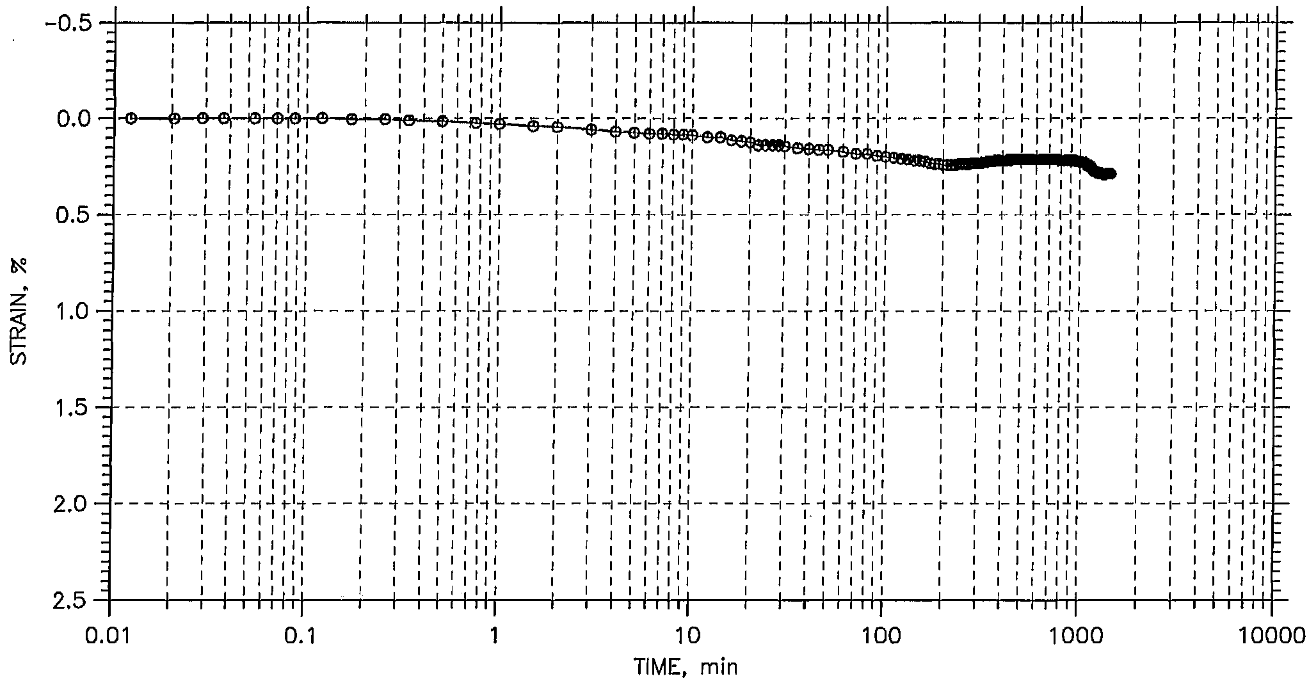
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.025	0.002871	1.880	0.29	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
2	0.05	0.006718	1.869	0.67	4.6	0.0	1.78e-004	0.00e+000	1.78e-004
3	0.1	0.01409	1.847	1.41	1.4	0.0	5.57e-004	0.00e+000	5.57e-004
4	0.2	0.02636	1.812	2.64	0.9	0.0	8.86e-004	0.00e+000	8.86e-004
5	0.4	0.04429	1.760	4.43	0.7	0.0	1.16e-003	0.00e+000	1.16e-003
6	0.8	0.07023	1.685	7.02	0.5	0.0	1.37e-003	0.00e+000	1.37e-003
7	1.6	0.1002	1.599	10.02	0.4	0.0	1.69e-003	0.00e+000	1.69e-003
8	3.2	0.1397	1.485	13.97	0.4	0.0	1.63e-003	0.00e+000	1.63e-003
9	1.6	0.1384	1.488	13.84	0.0	0.0	1.64e-002	0.00e+000	1.64e-002
10	0.4	0.1384	1.488	13.84	0.1	0.0	4.86e-003	0.00e+000	4.86e-003
11	0.8	0.1393	1.486	13.93	1.6	0.0	3.80e-004	0.00e+000	3.80e-004
12	1.6	0.1387	1.488	13.87	0.0	0.0	1.29e-002	0.00e+000	1.29e-002
13	3.2	0.1416	1.479	14.16	0.1	0.0	9.61e-003	0.00e+000	9.61e-003
14	6.4	0.1858	1.352	18.58	0.3	0.0	1.71e-003	0.00e+000	1.71e-003
15	12.8	0.2353	1.208	23.53	0.3	0.0	1.62e-003	0.00e+000	1.62e-003
16	25.6	0.2883	1.055	28.83	0.3	0.0	1.51e-003	0.00e+000	1.51e-003
17	38.4	0.3226	0.956	32.26	0.8	0.0	4.71e-004	0.00e+000	4.71e-004
18	51.2	0.3447	0.893	34.47	3.0	0.0	1.23e-004	0.00e+000	1.23e-004
19	12.8	0.3422	0.900	34.22	0.0	0.0	7.49e-003	0.00e+000	7.49e-003
20	3.2	0.34	0.906	34.00	0.0	0.0	7.26e-003	0.00e+000	7.26e-003
21	0.8	0.339	0.909	33.90	0.1	0.0	5.08e-003	0.00e+000	5.08e-003

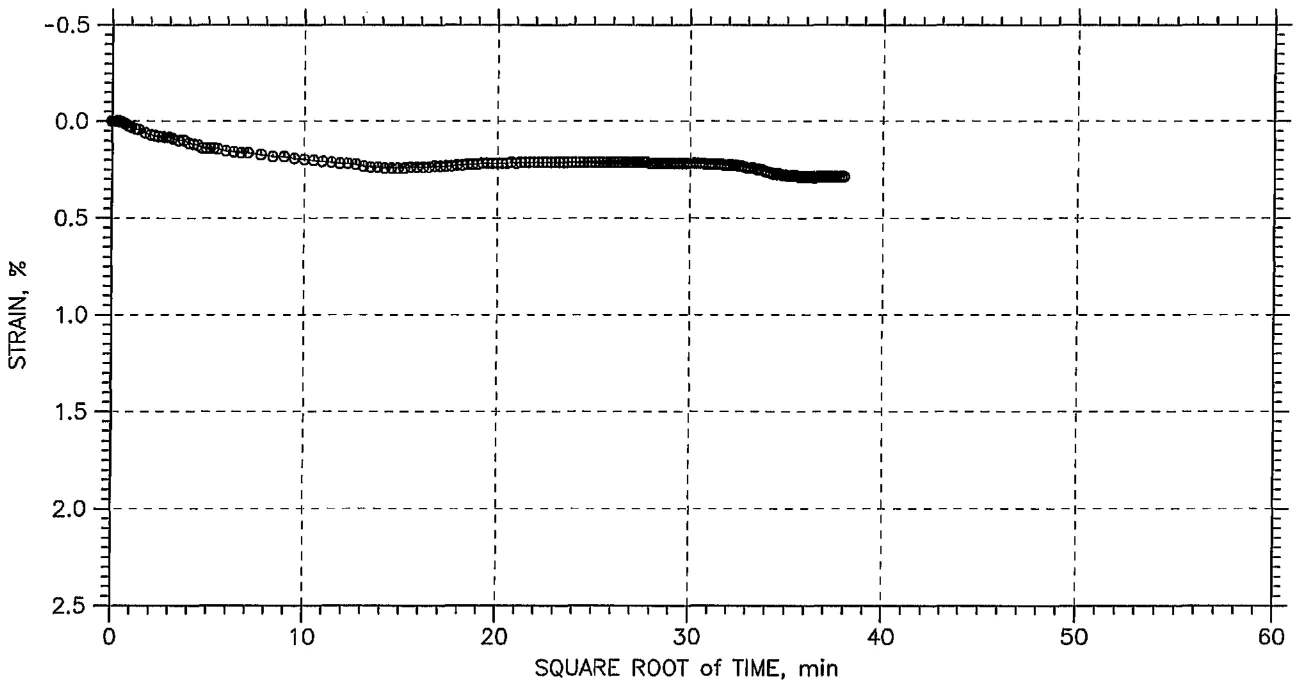
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

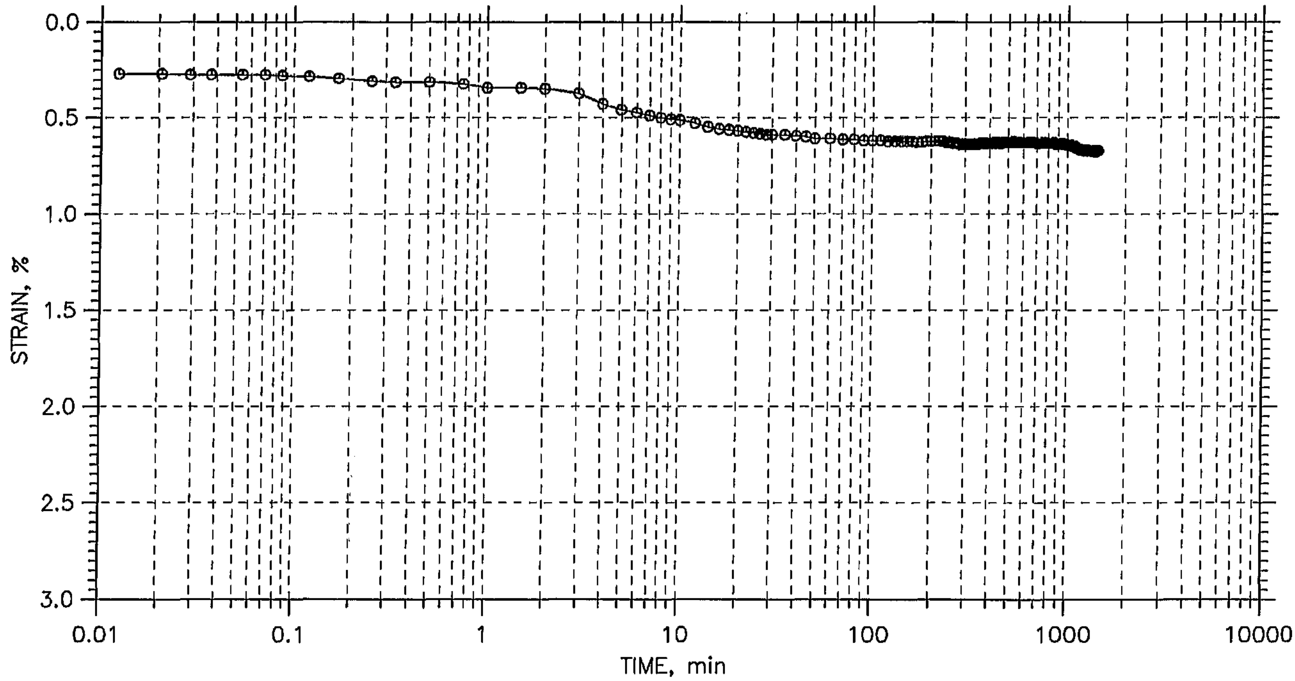
Mon, 16-JUL-2007 12:36:17

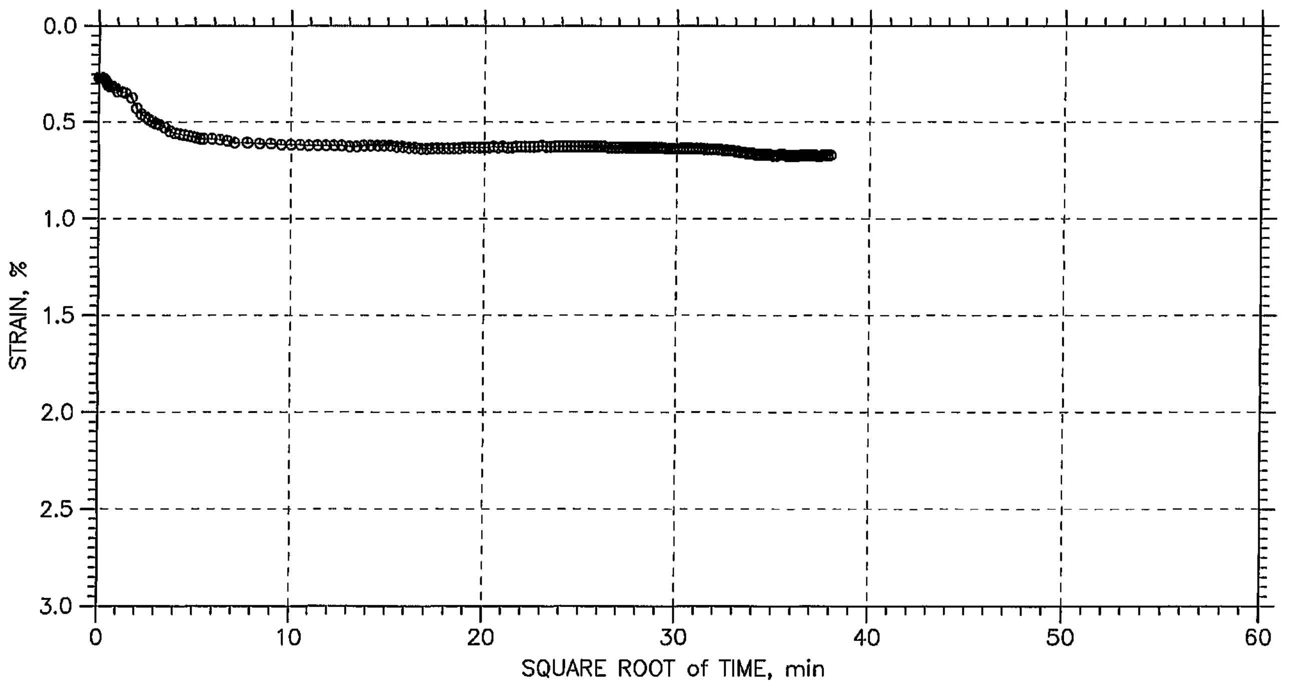
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

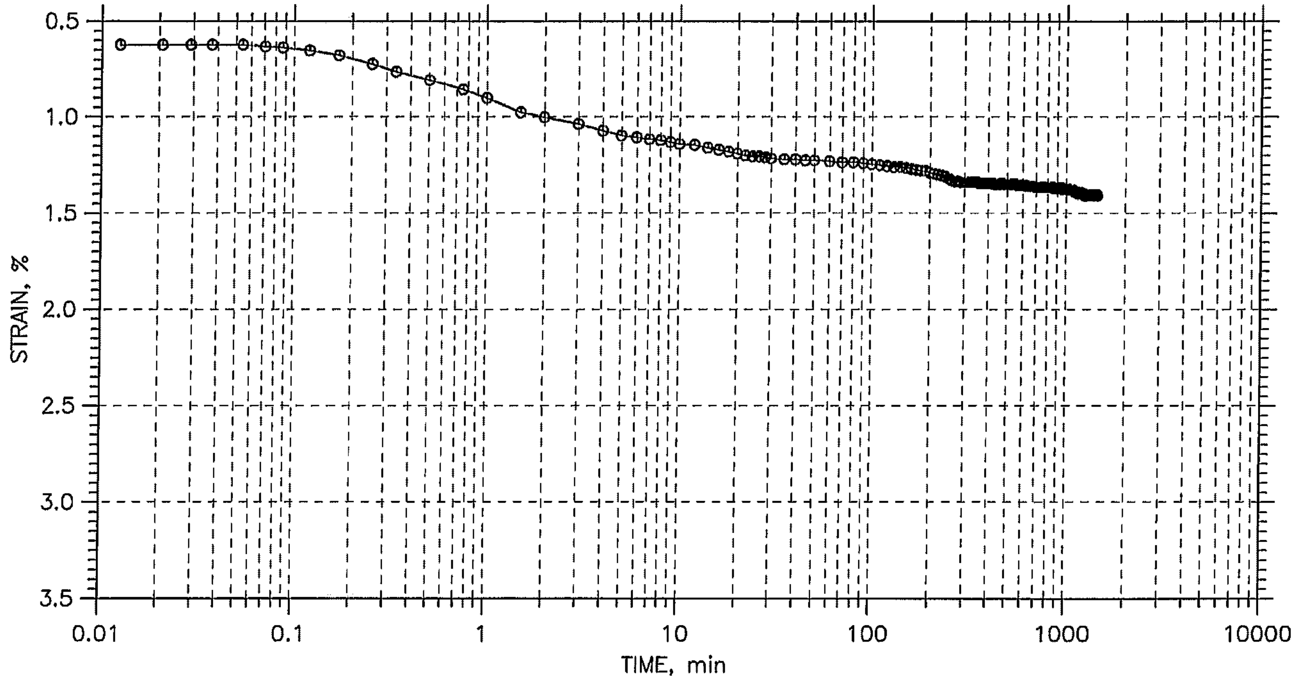
Mon, 16-JUL-2007 12:36:26

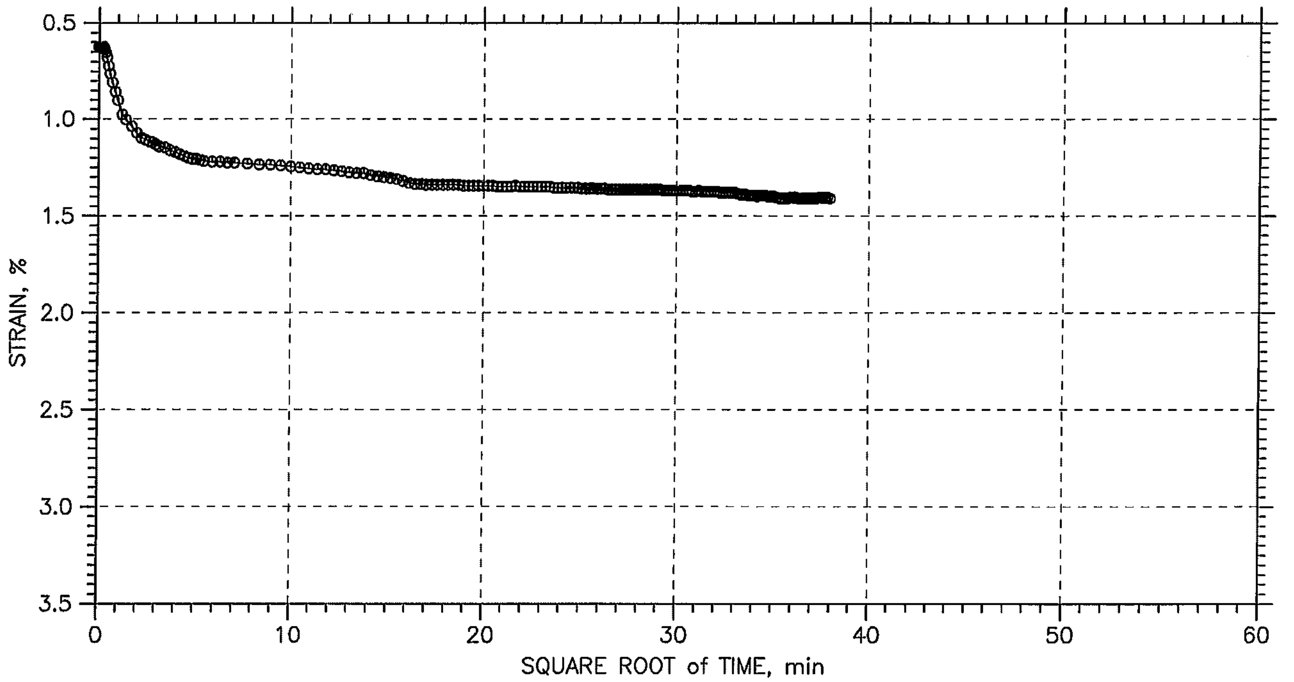
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

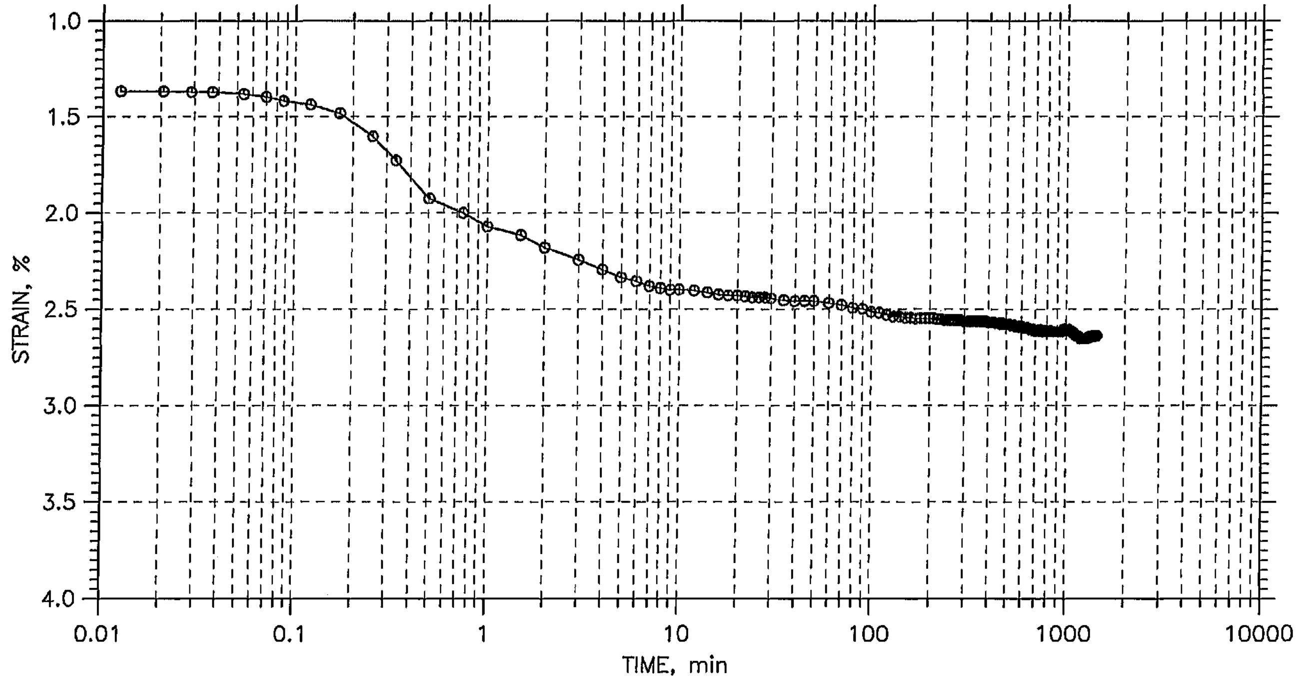
Mon, 16-JUL-2007 12:36:33

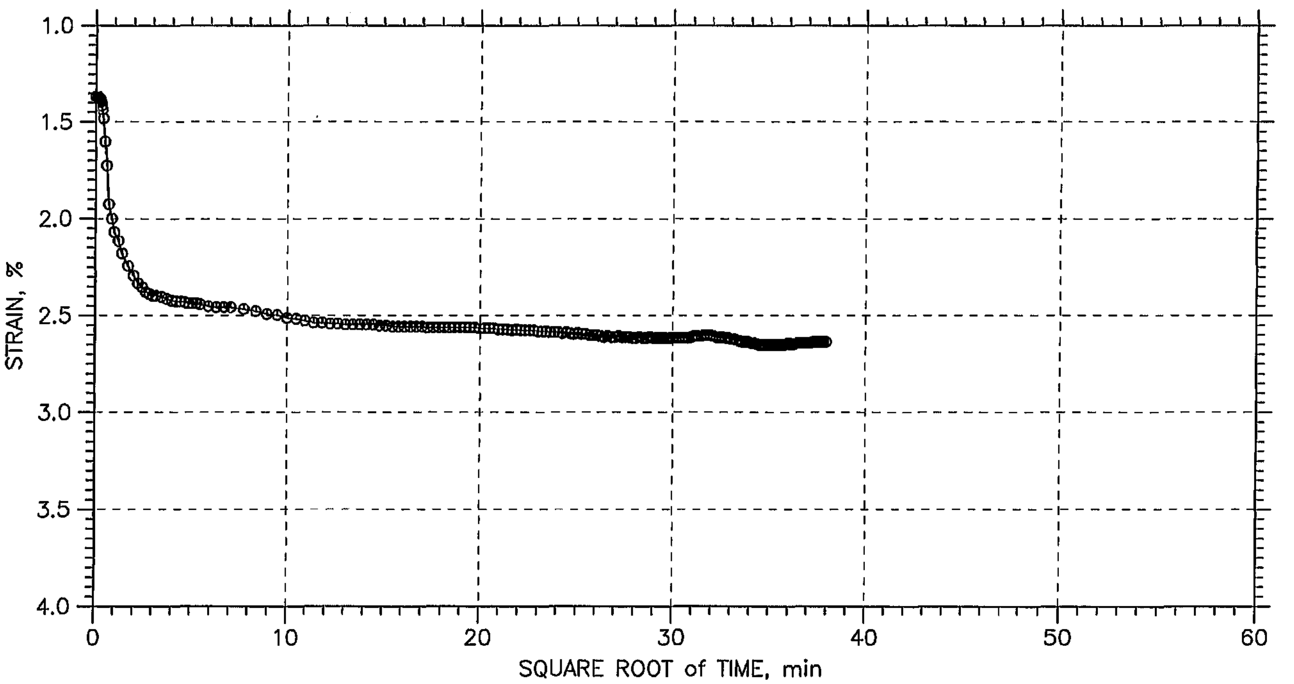
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

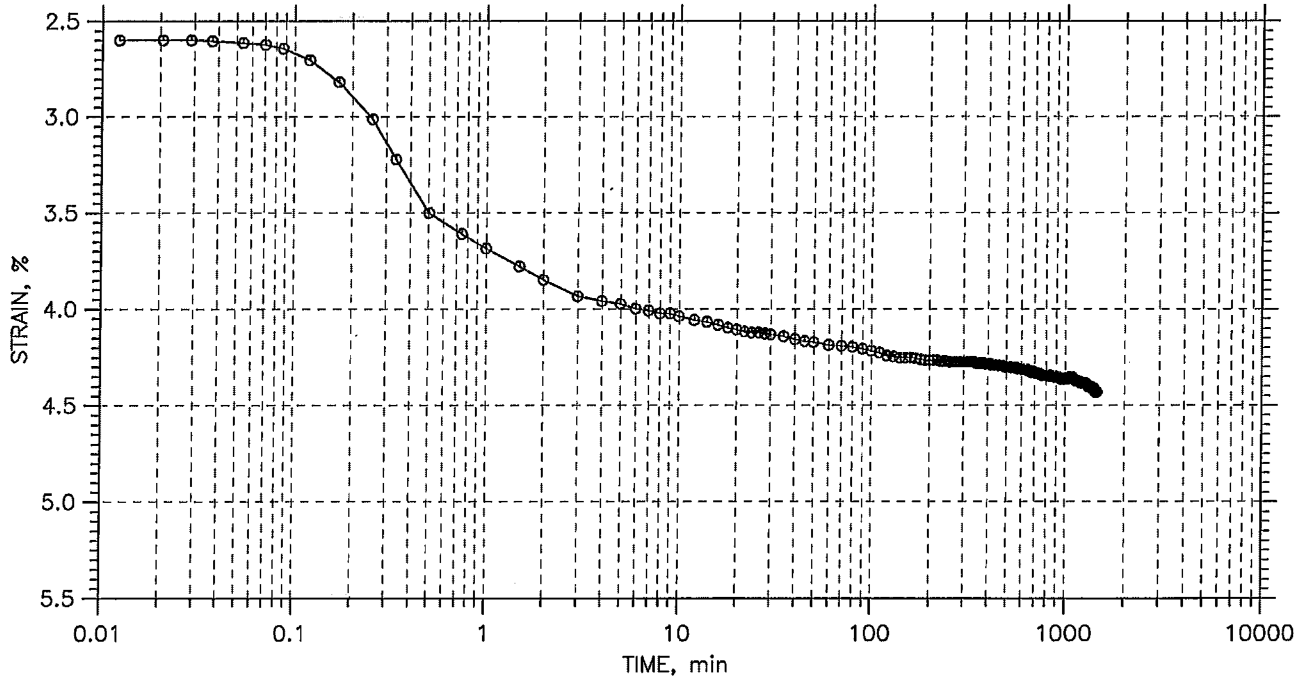
Mon, 16-JUL-2007 12:36:48

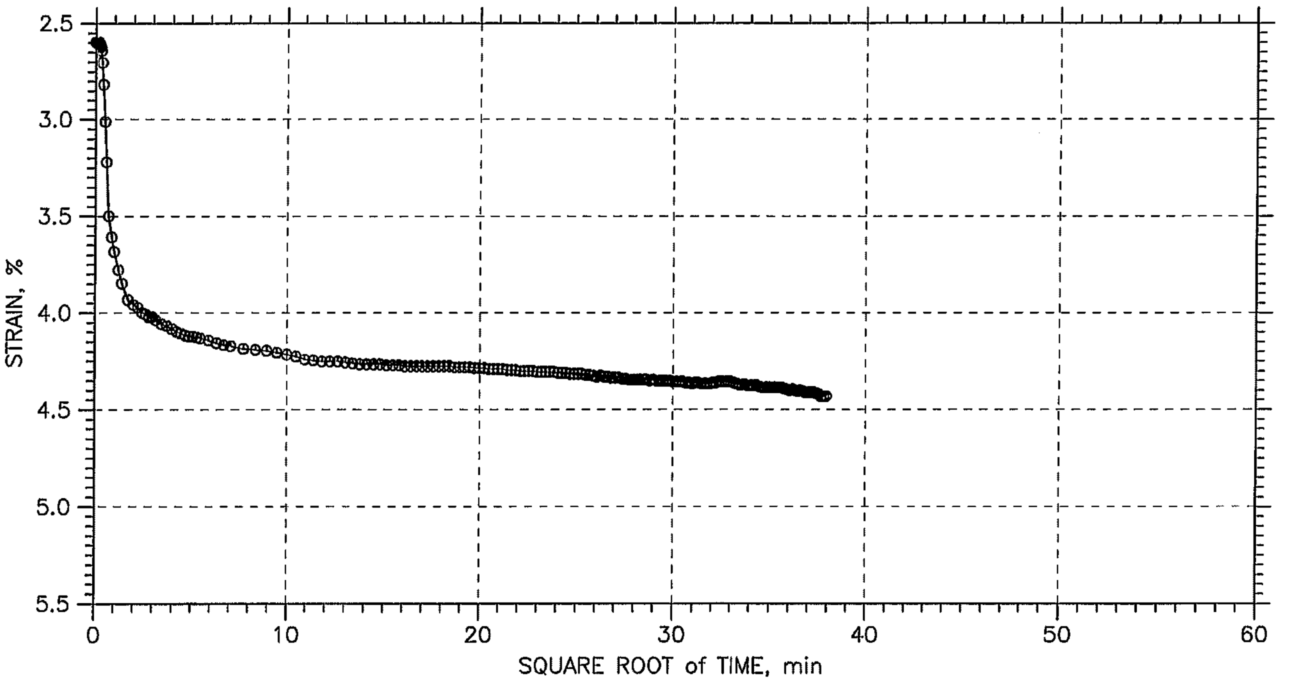
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

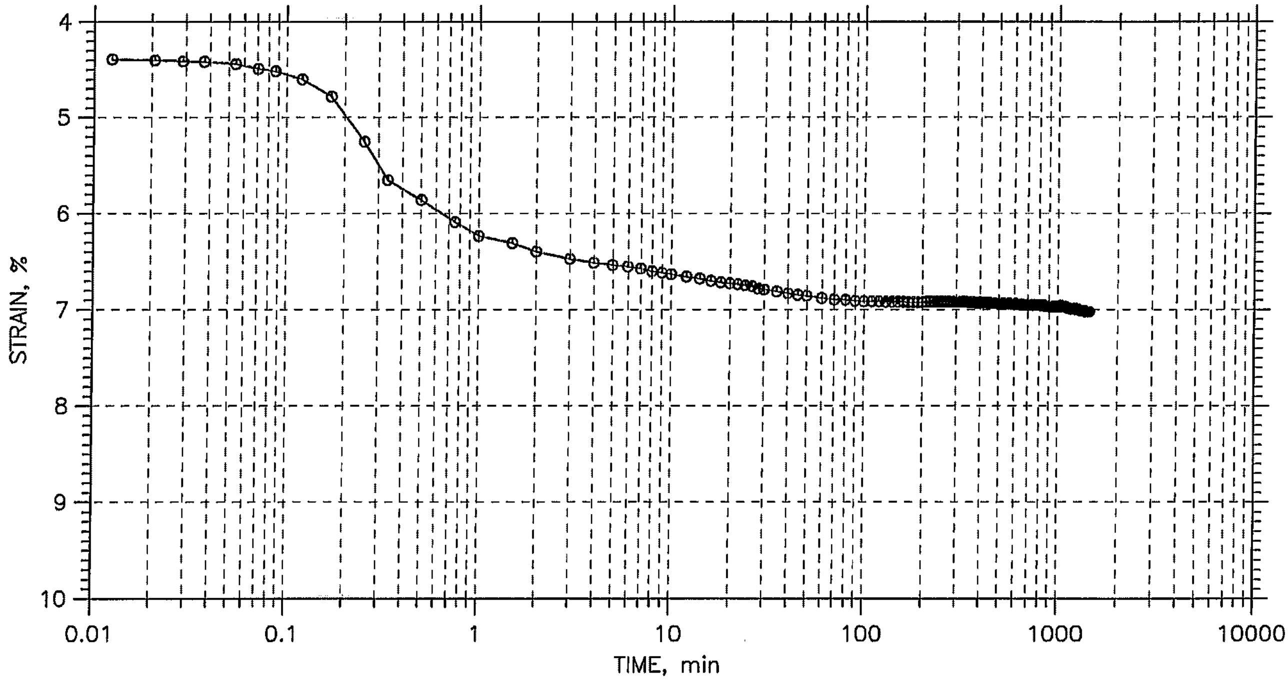
Mon, 16-JUL-2007 12:37:04

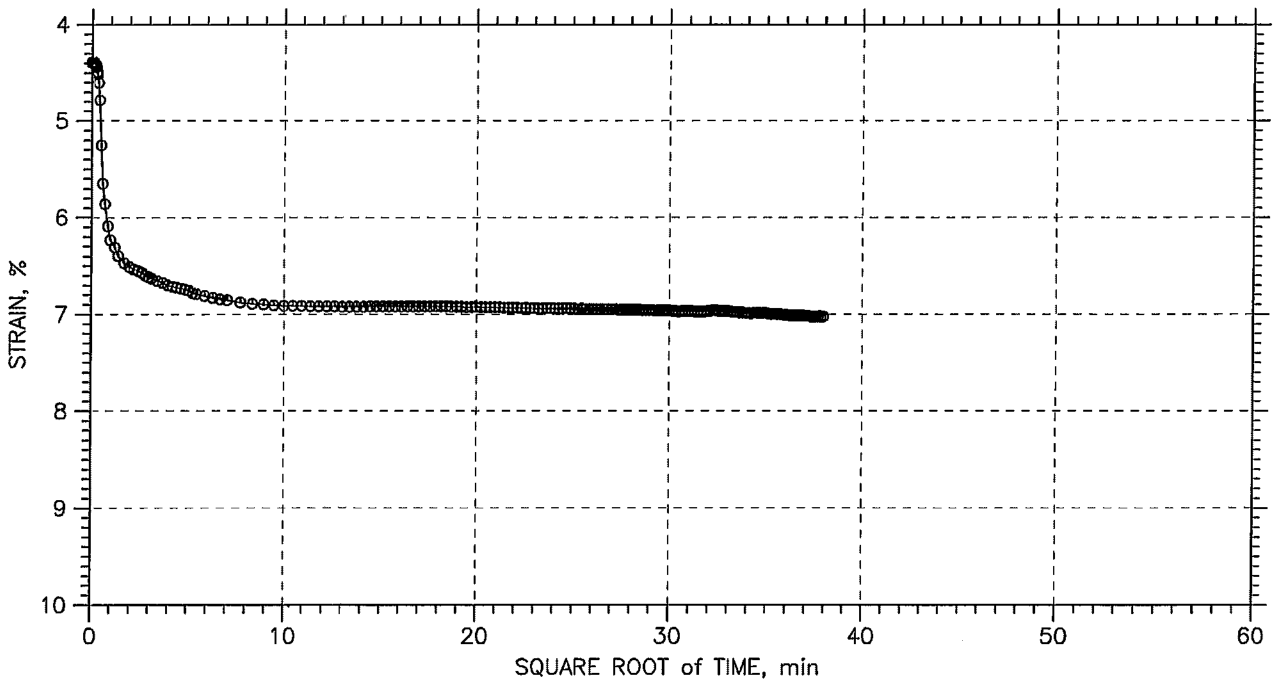
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

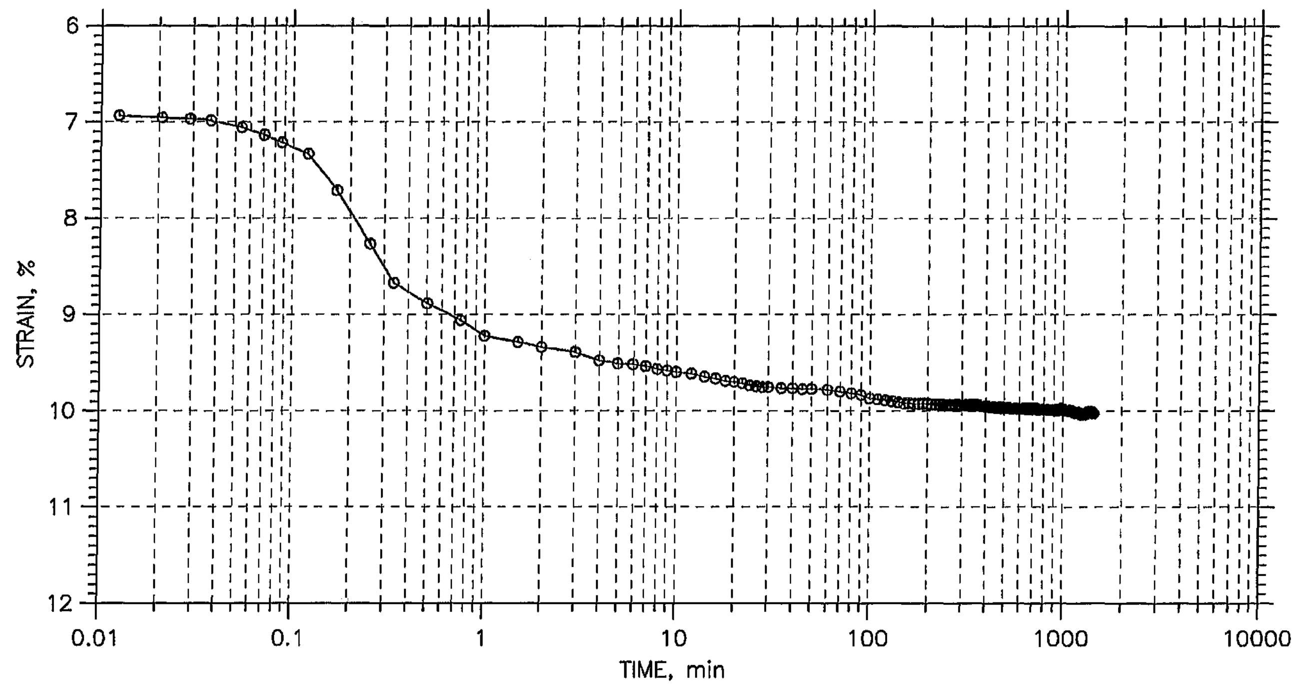
Mon, 16-JUL-2007 12:37:14

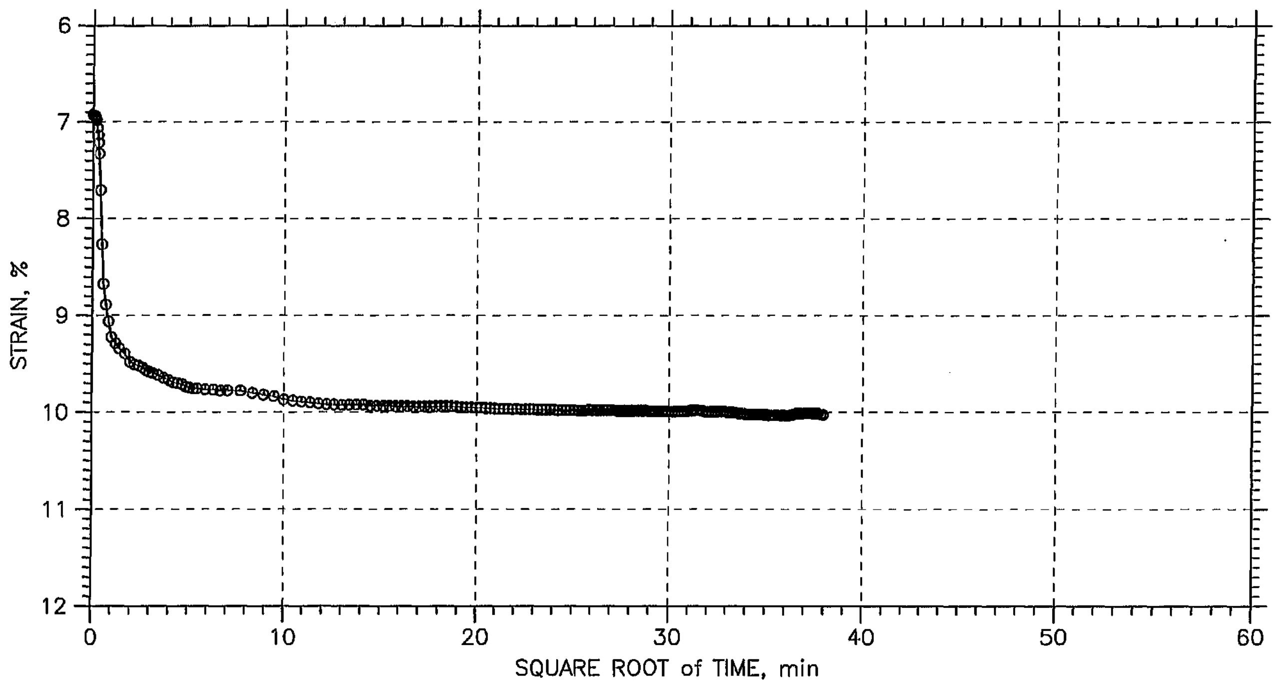
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

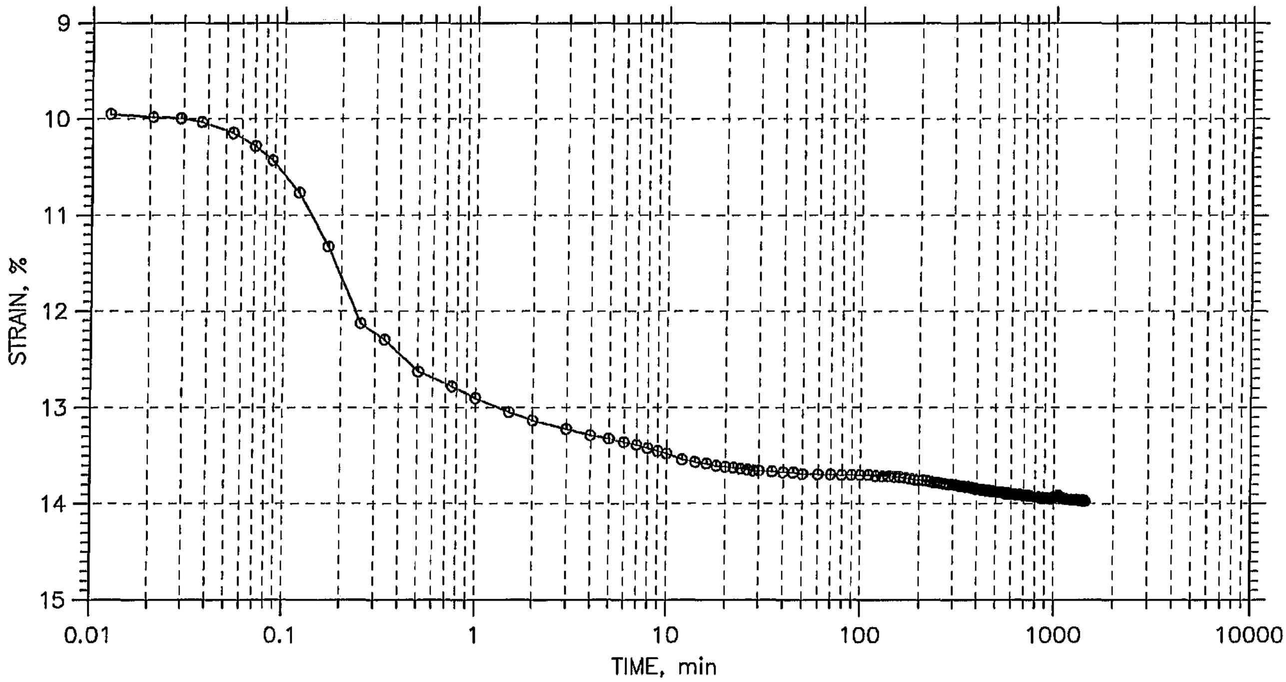
Mon, 16-JUL-2007 12:37:22

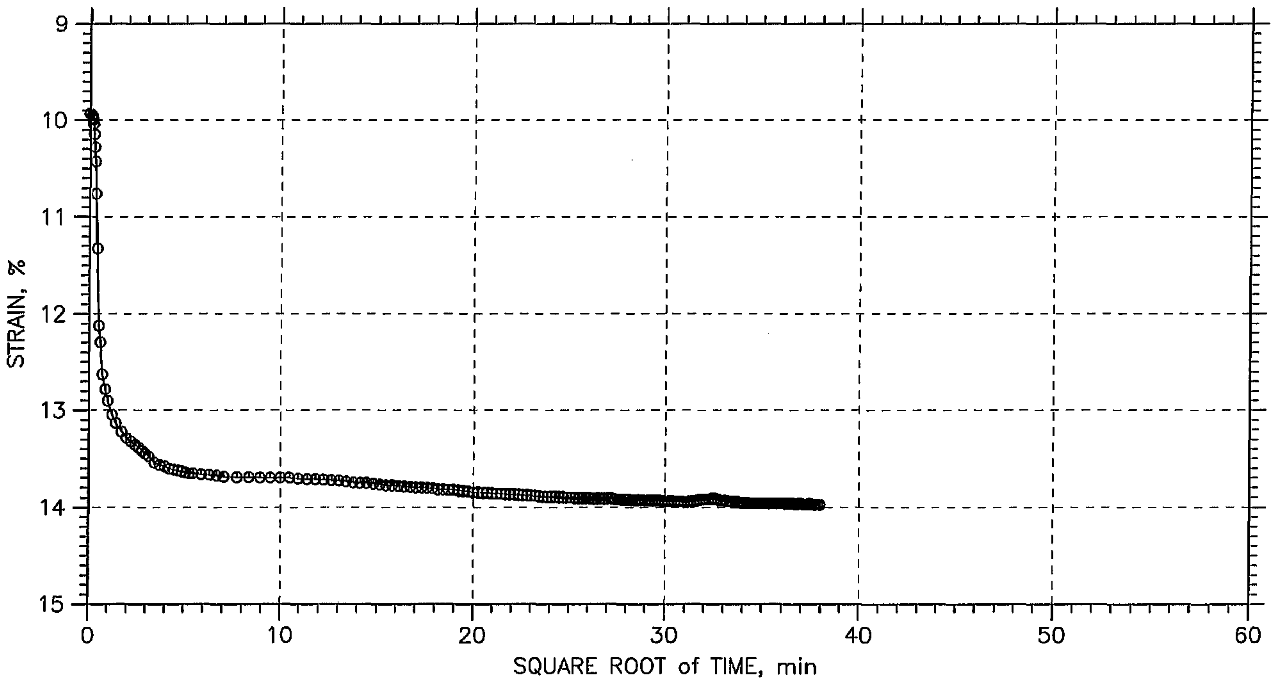
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

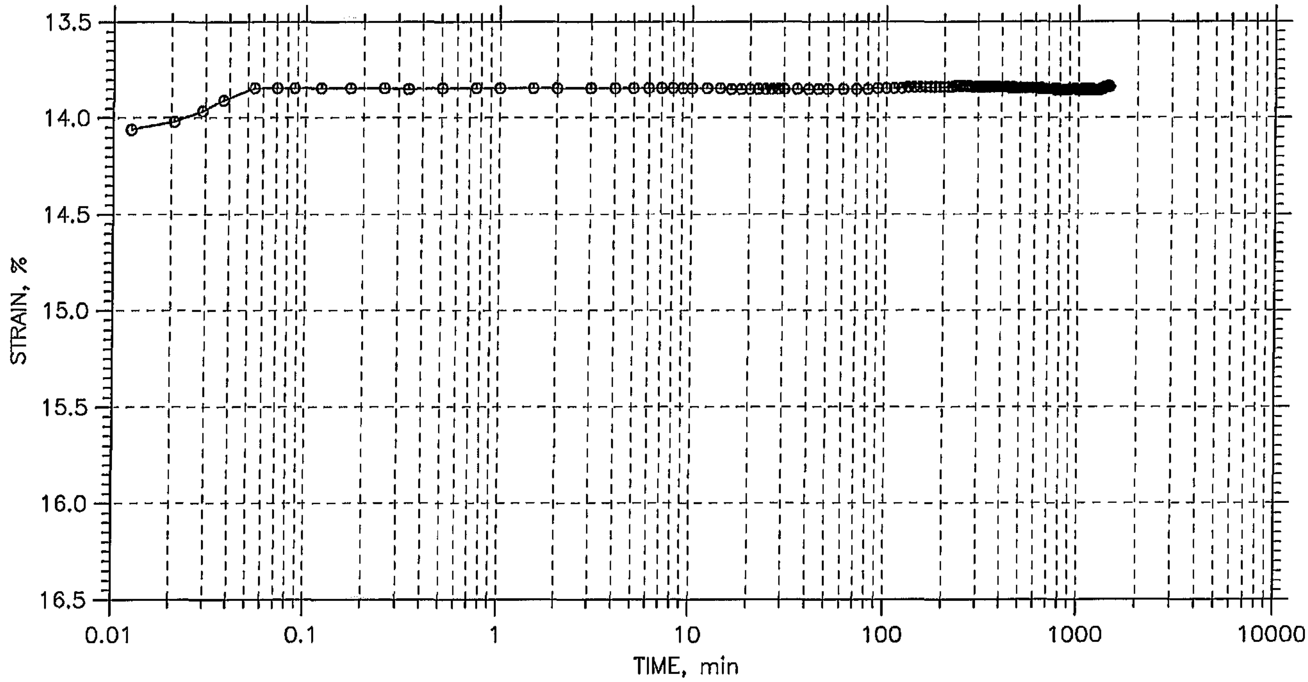
Mon, 16-JUL-2007 12:37:30

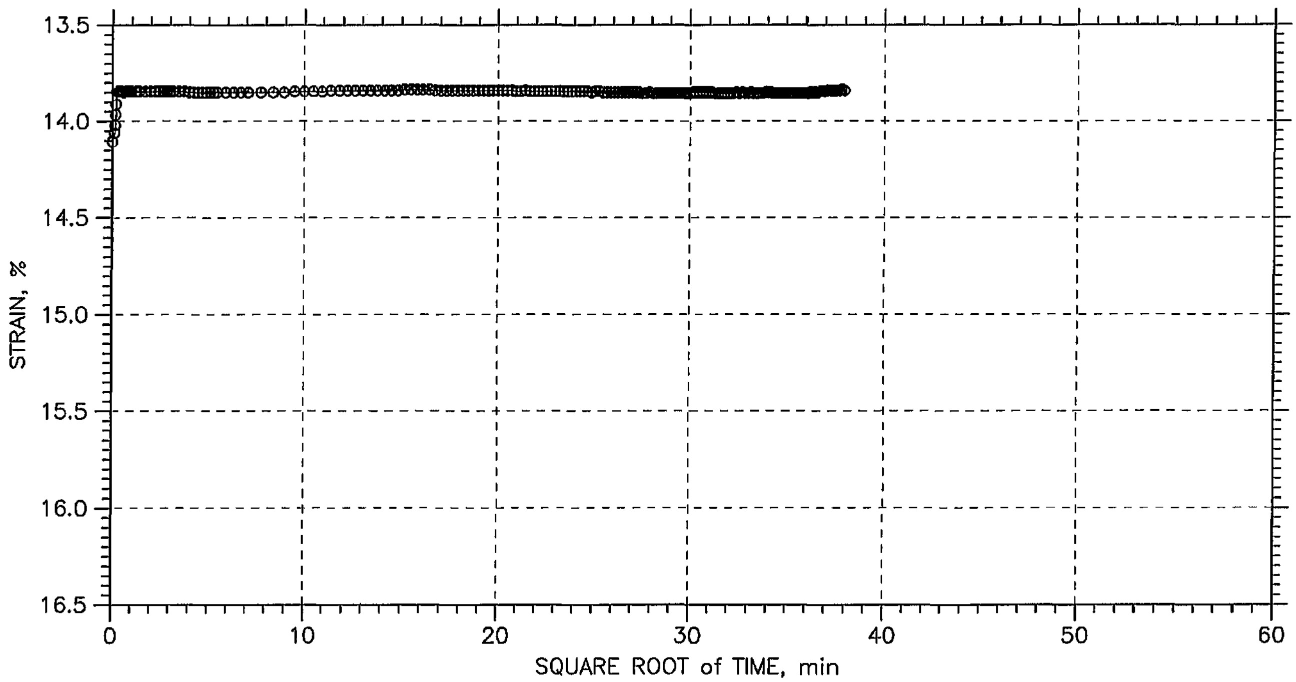
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

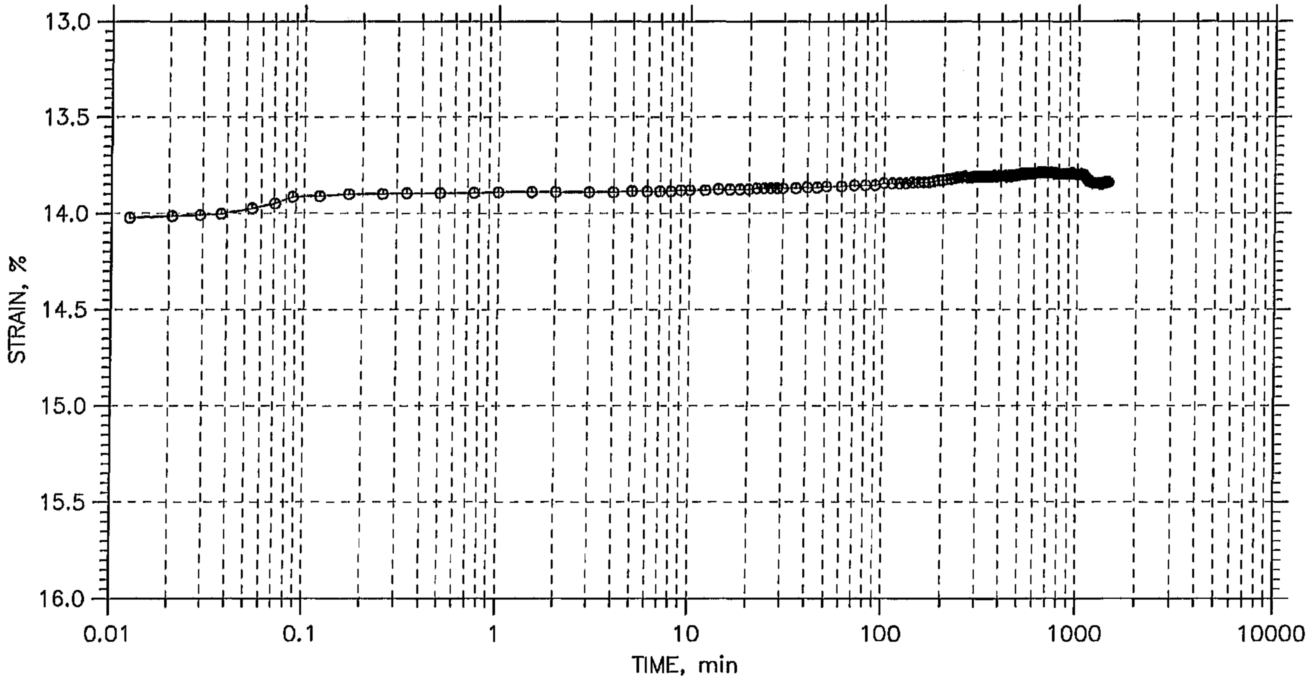
Mon, 16-JUL-2007 12:37:56

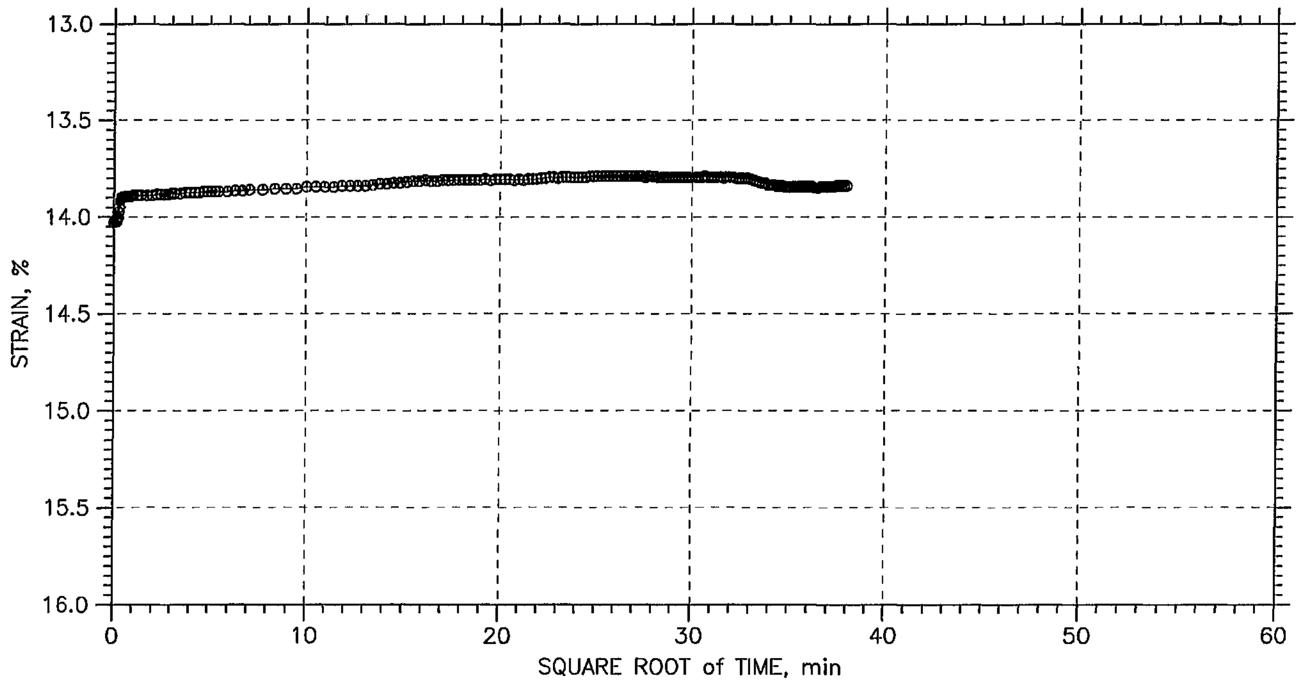
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

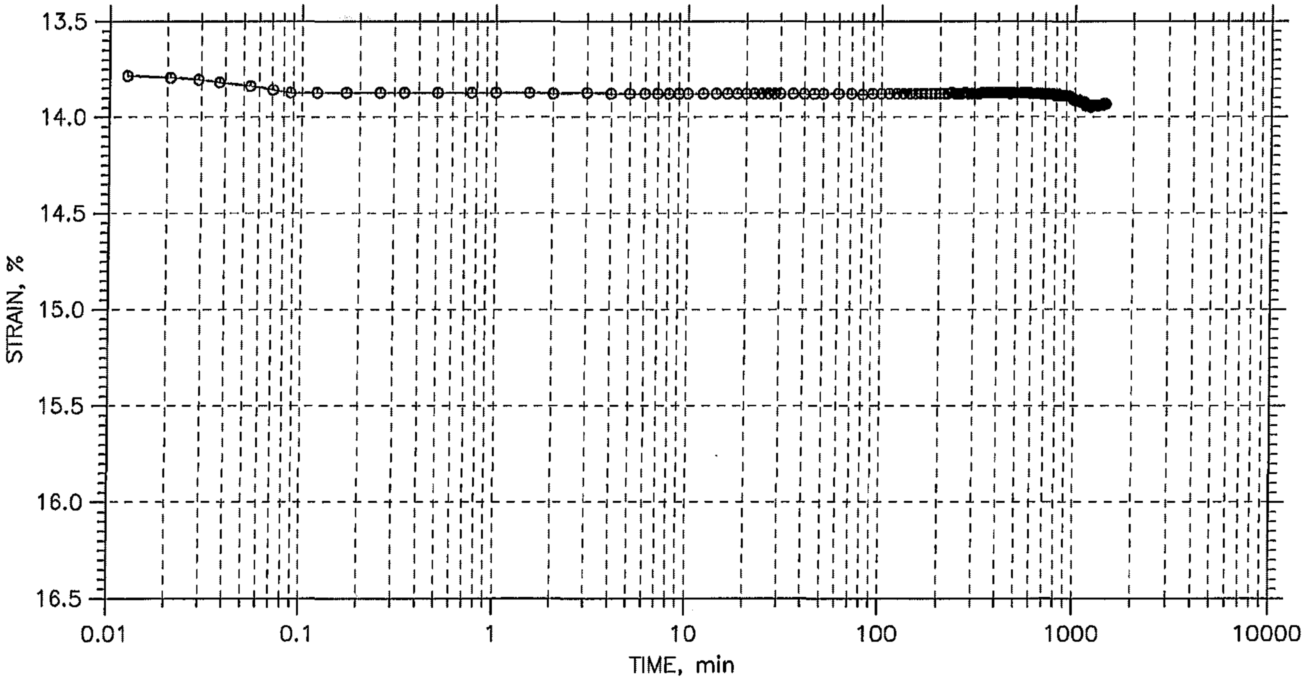
Mon, 16-JUL-2007 12:38:39

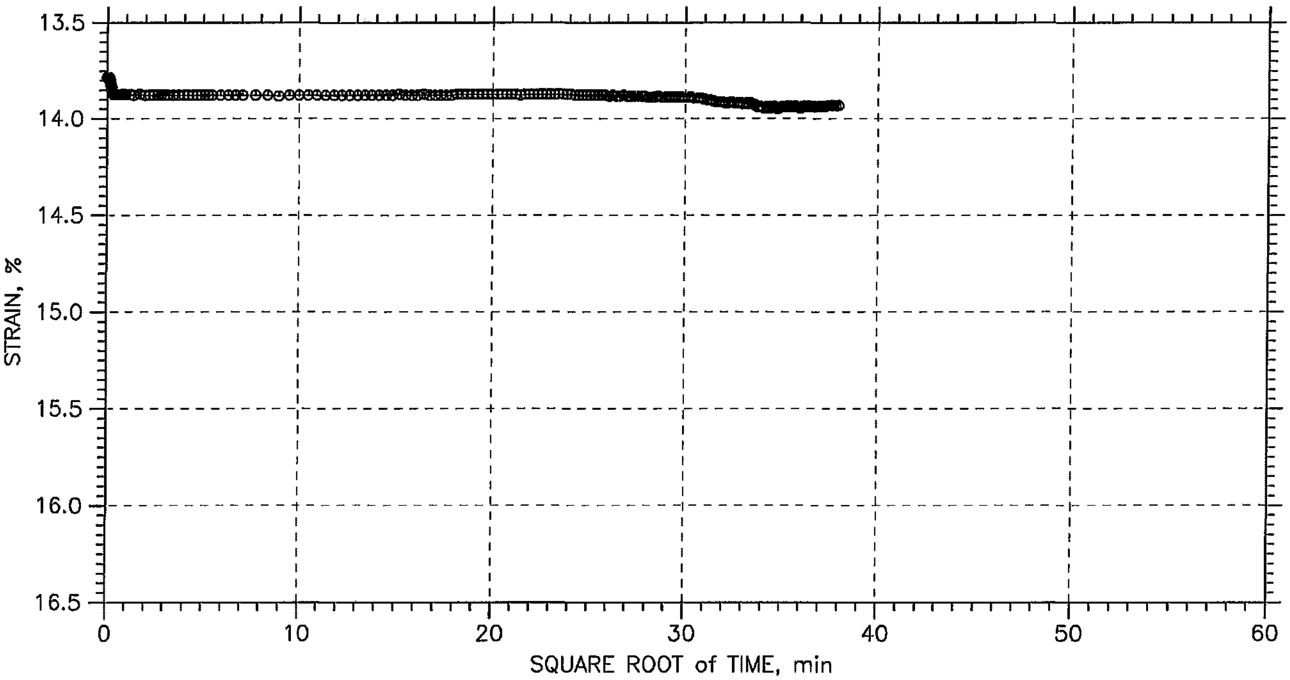
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

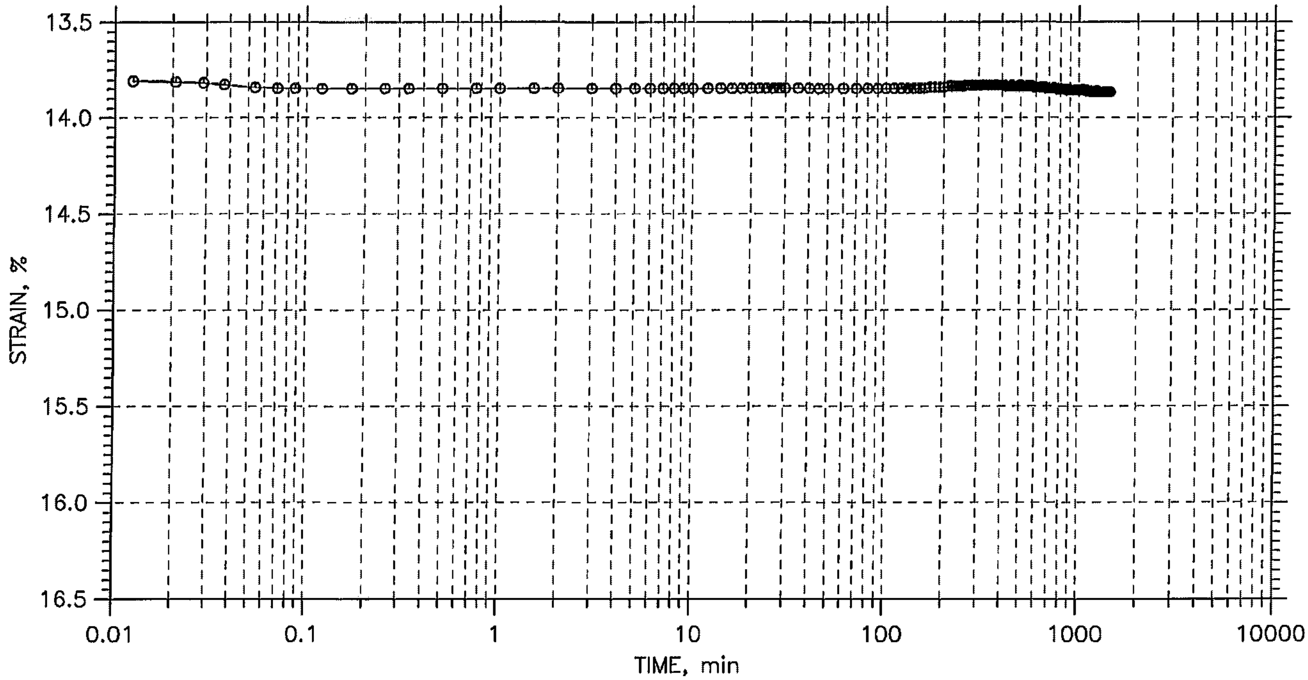
Mon, 16-JUL-2007 12:39:17

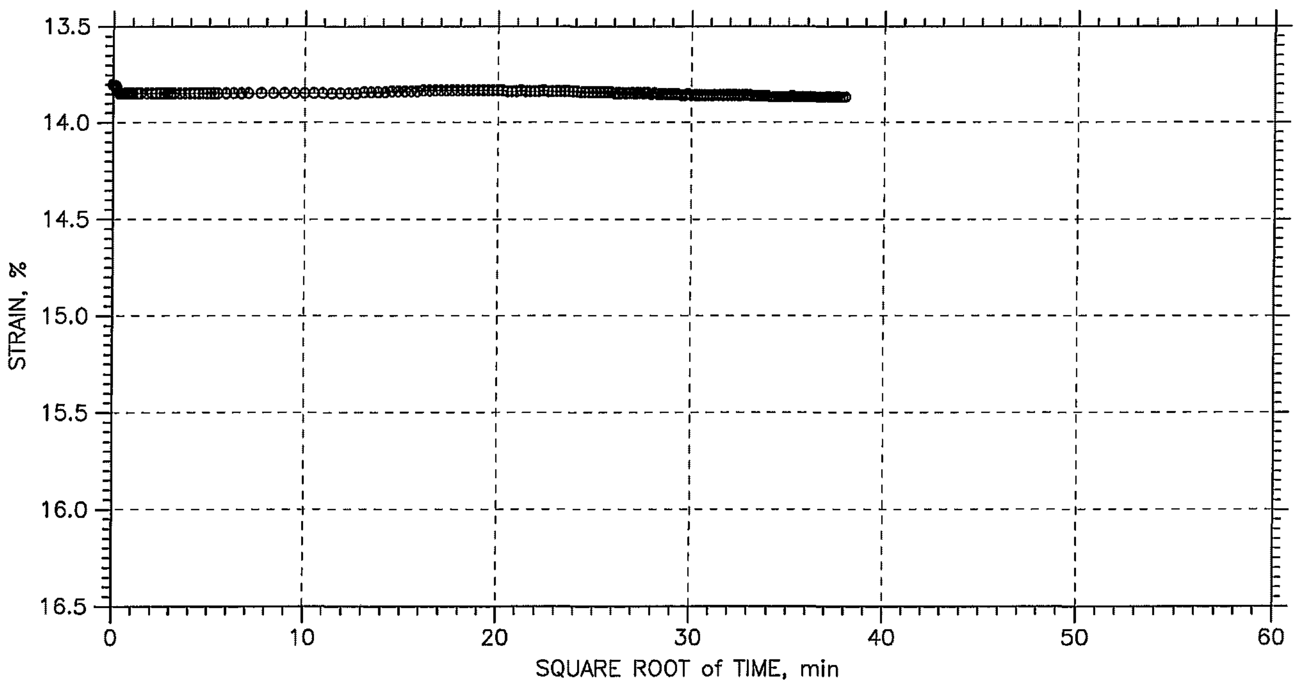
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

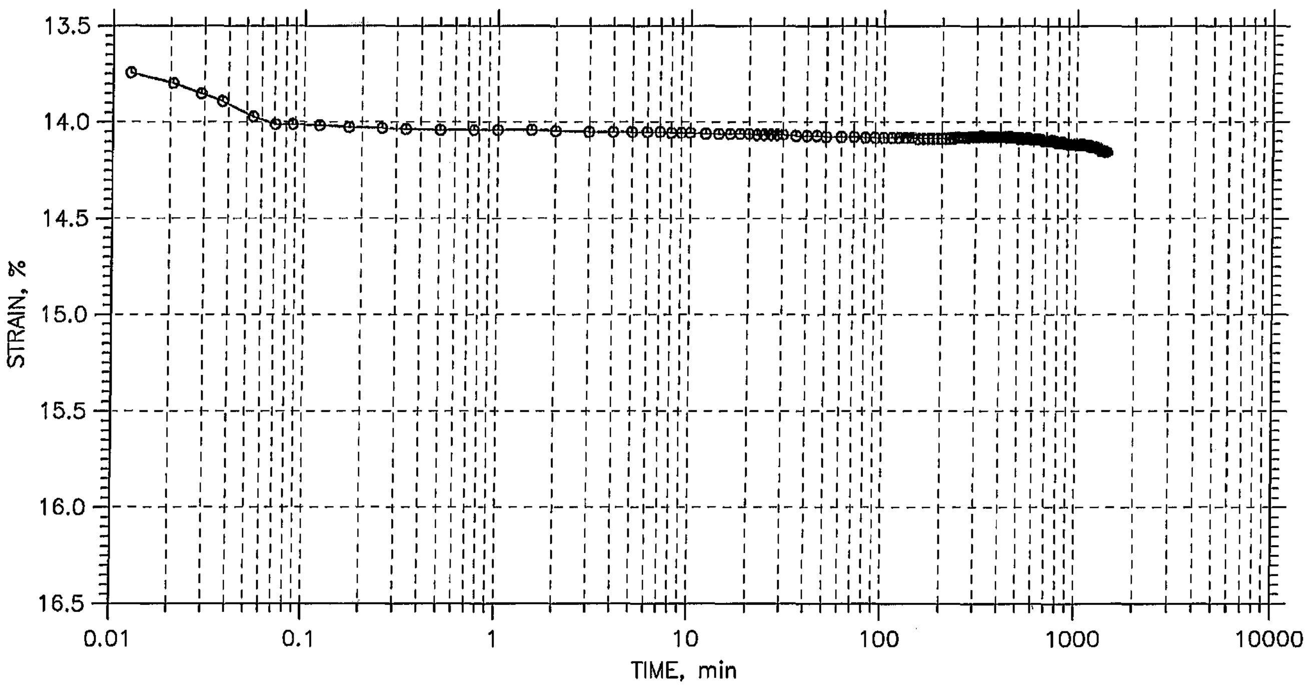
Mon, 16-JUL-2007 12:39:35

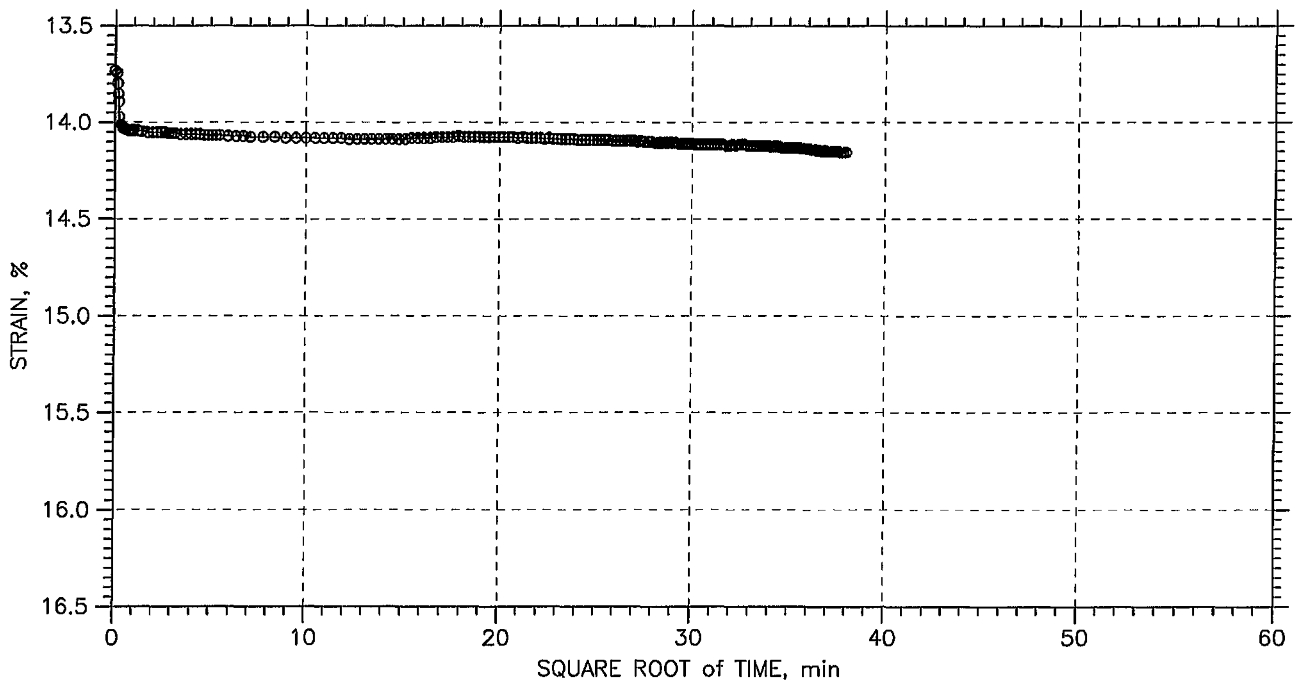
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

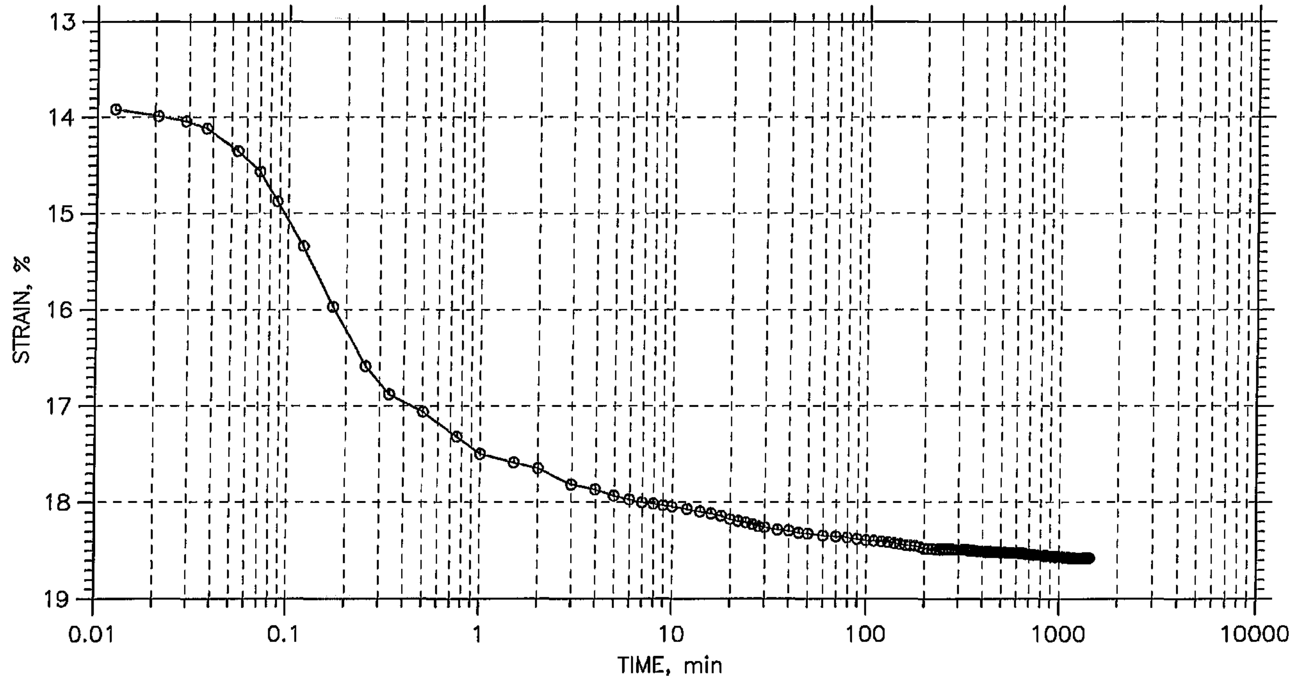
Mon, 16-JUL-2007 12:39:53

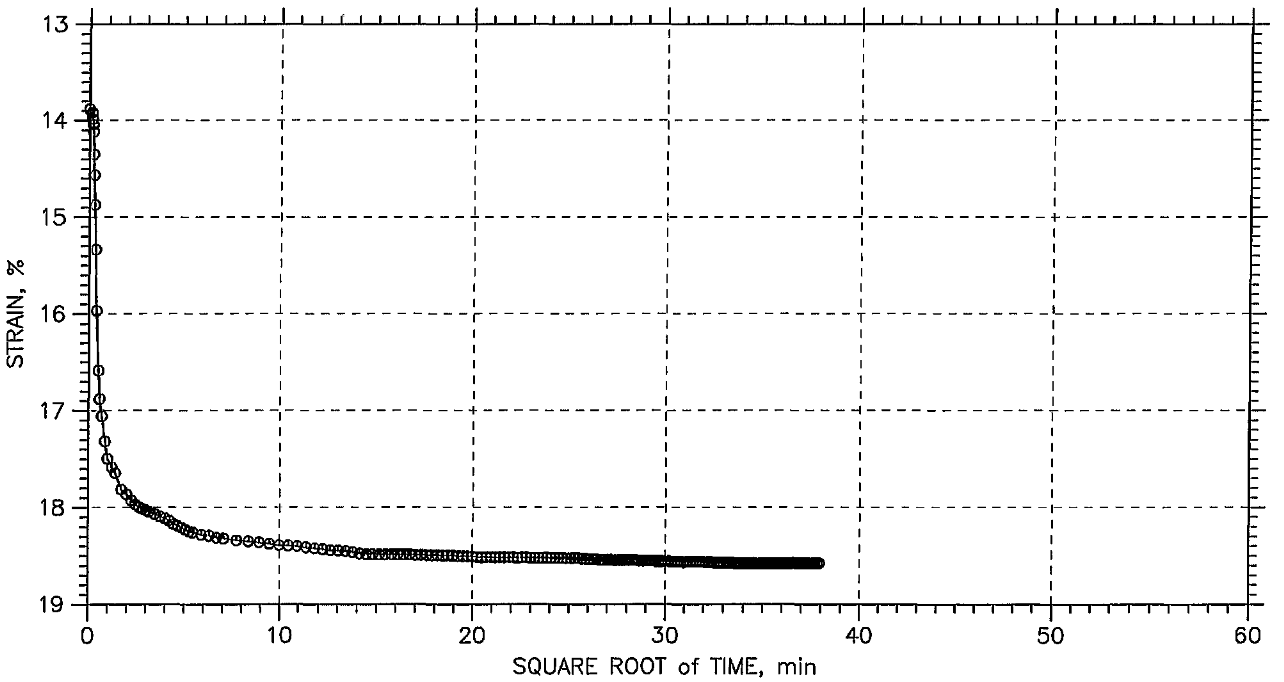
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

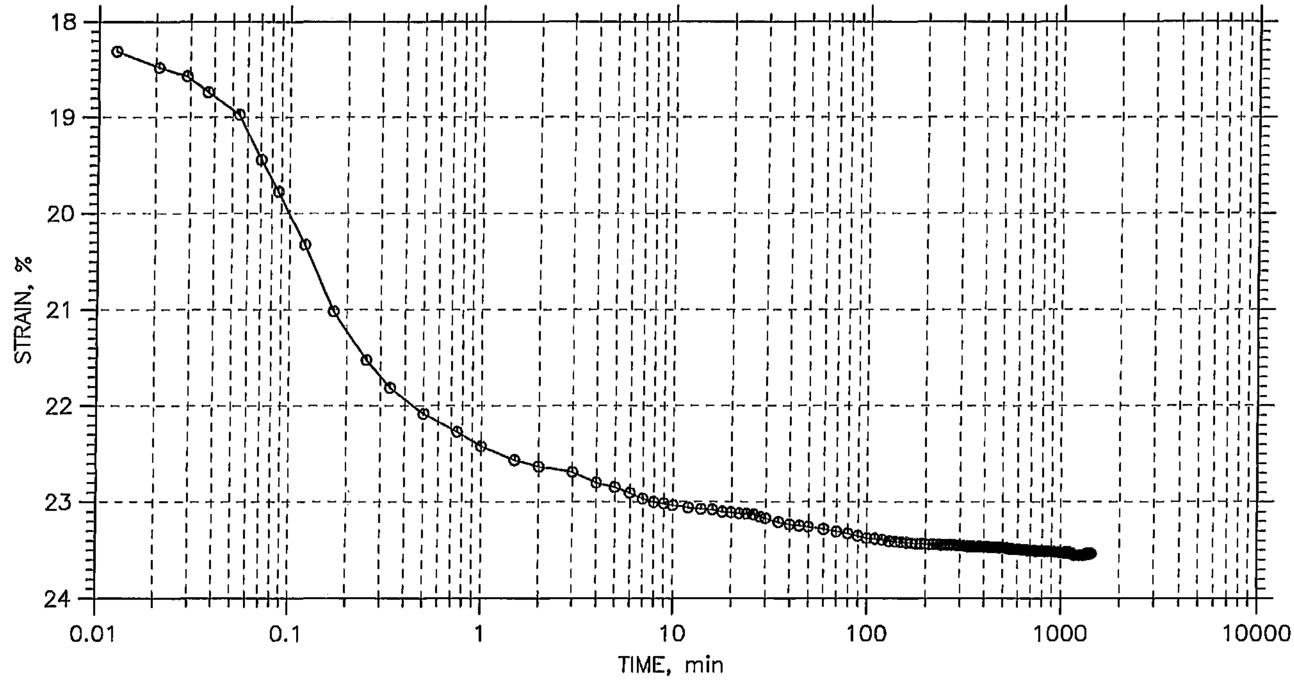
Mon, 16-JUL-2007 12:40:08

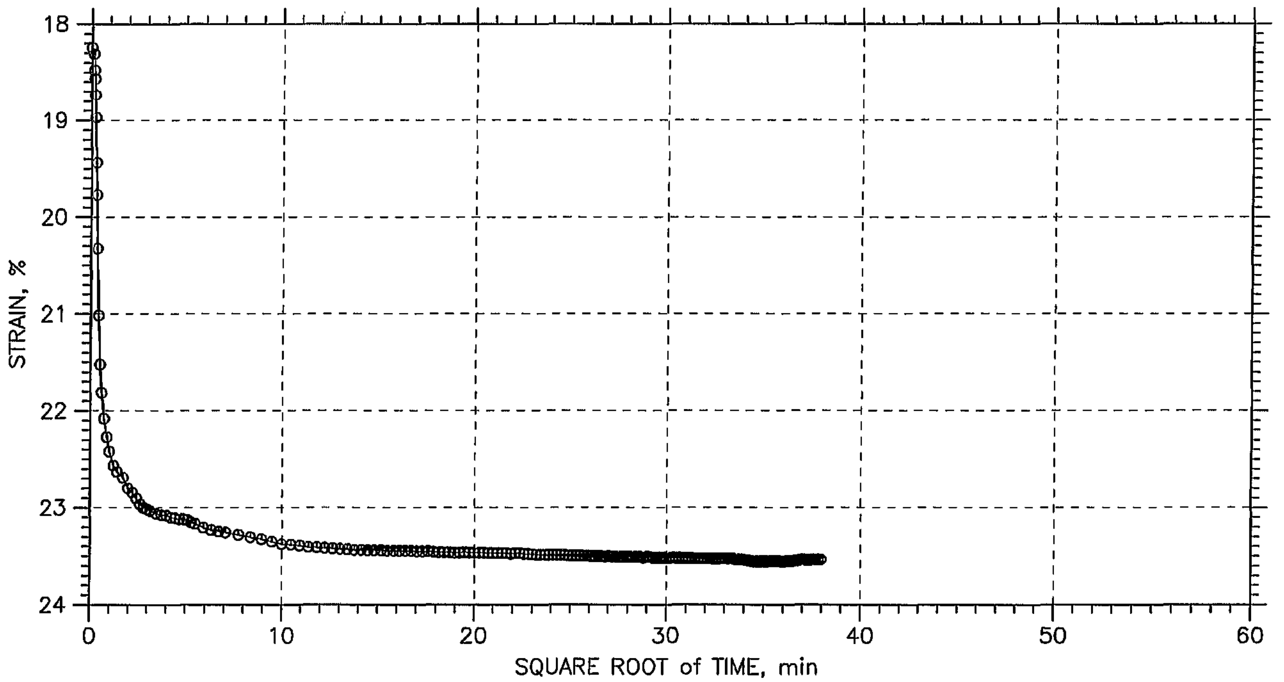
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

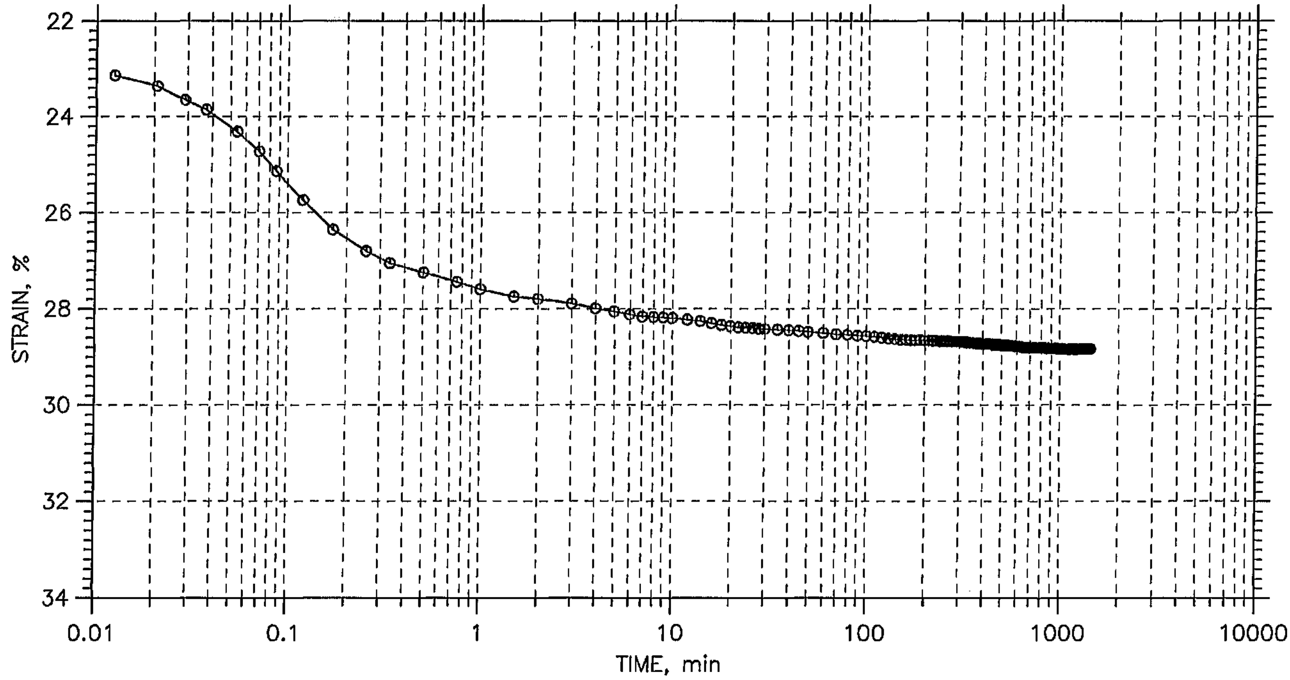
Mon, 16-JUL-2007 12:40:16

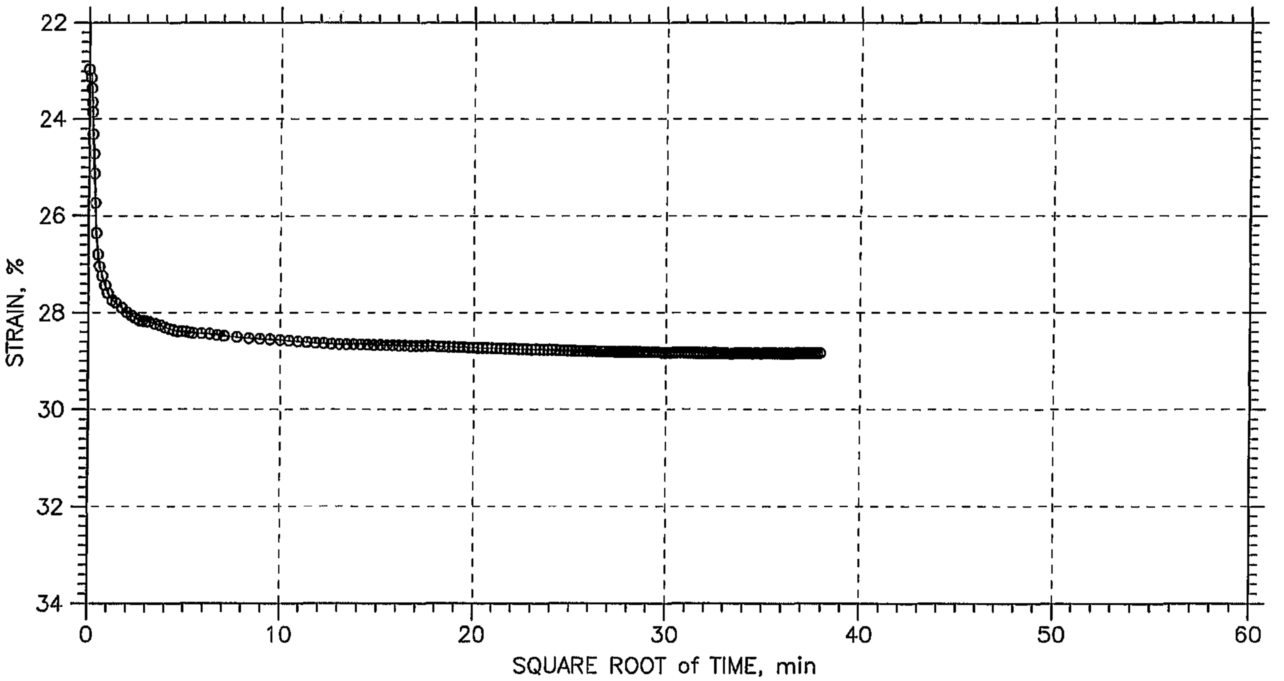
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

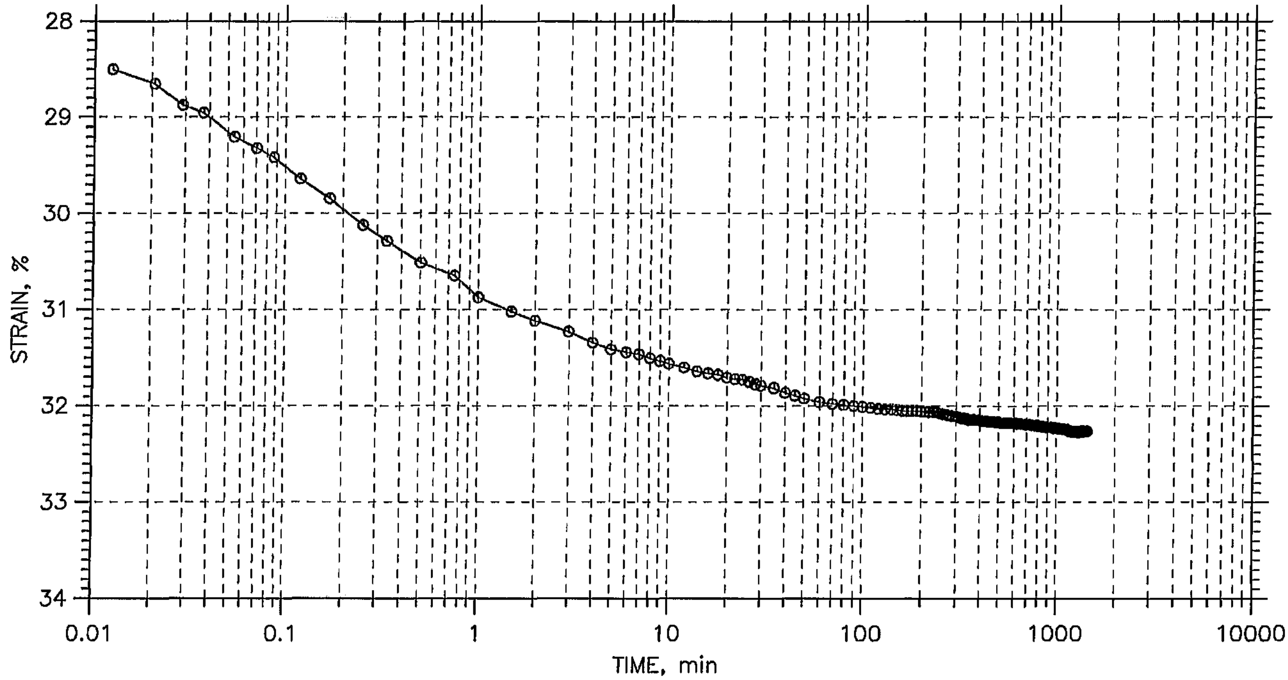
Mon, 16-JUL-2007 12:40:27

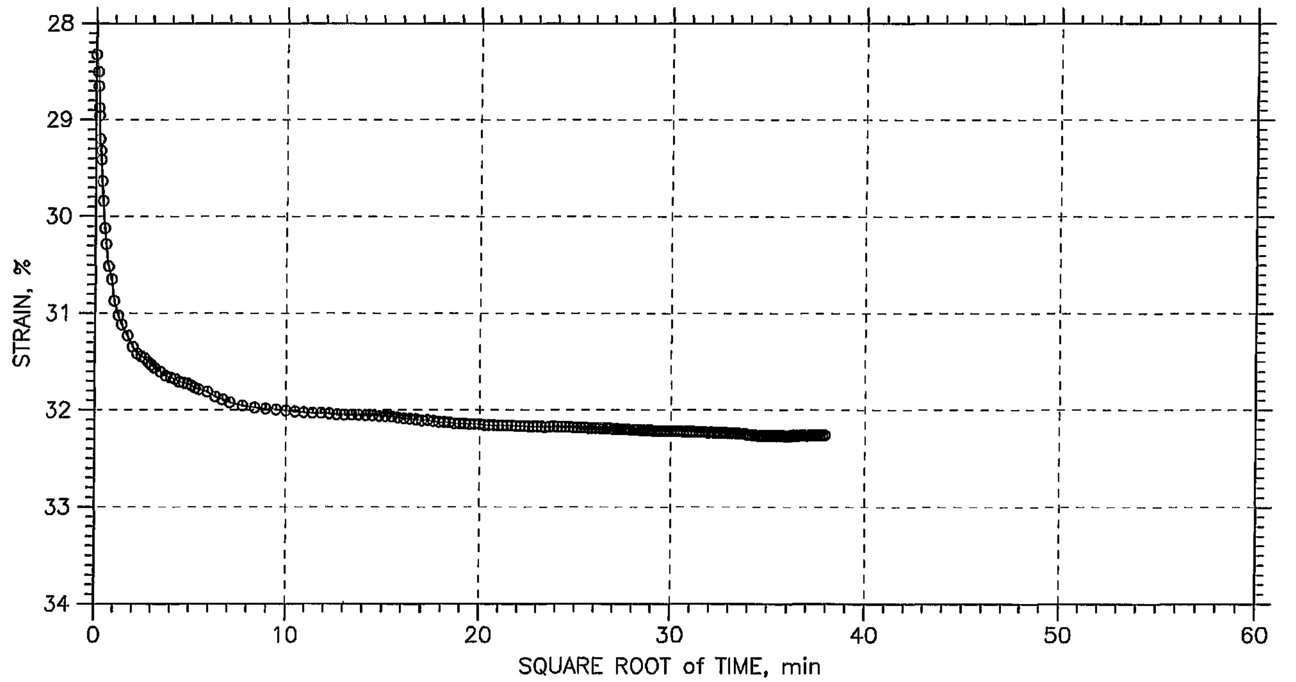
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

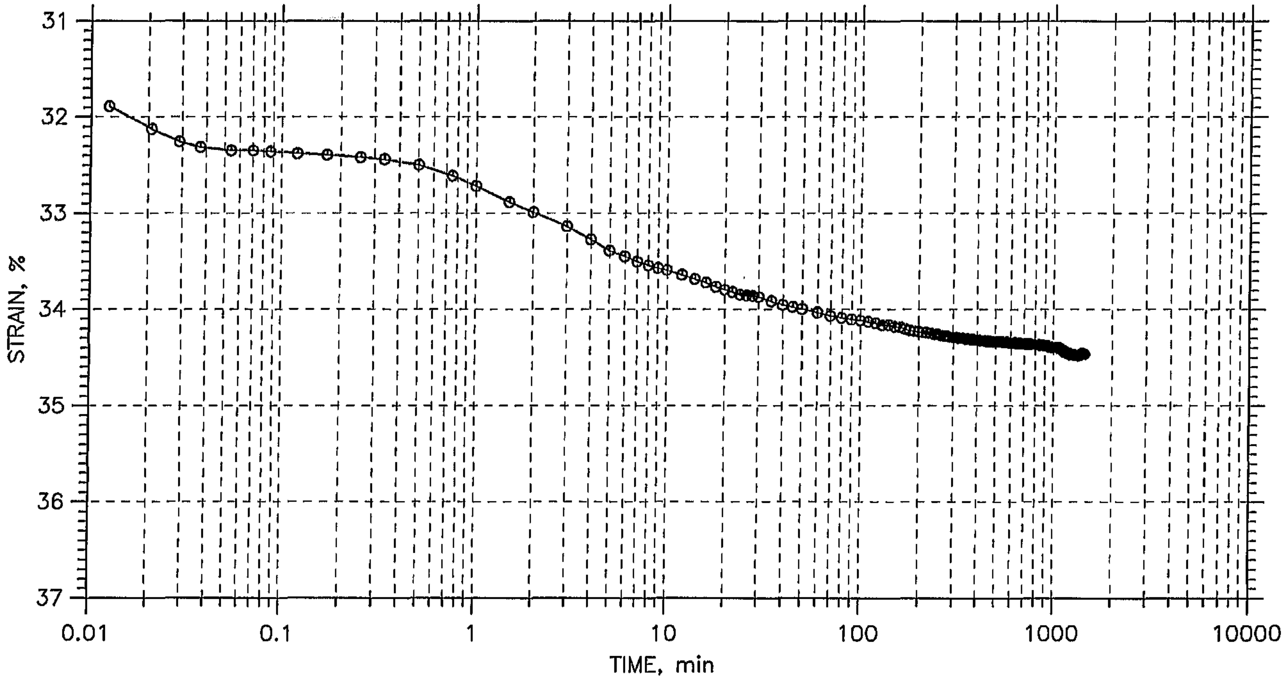
Mon, 16-JUL-2007 12:40:34

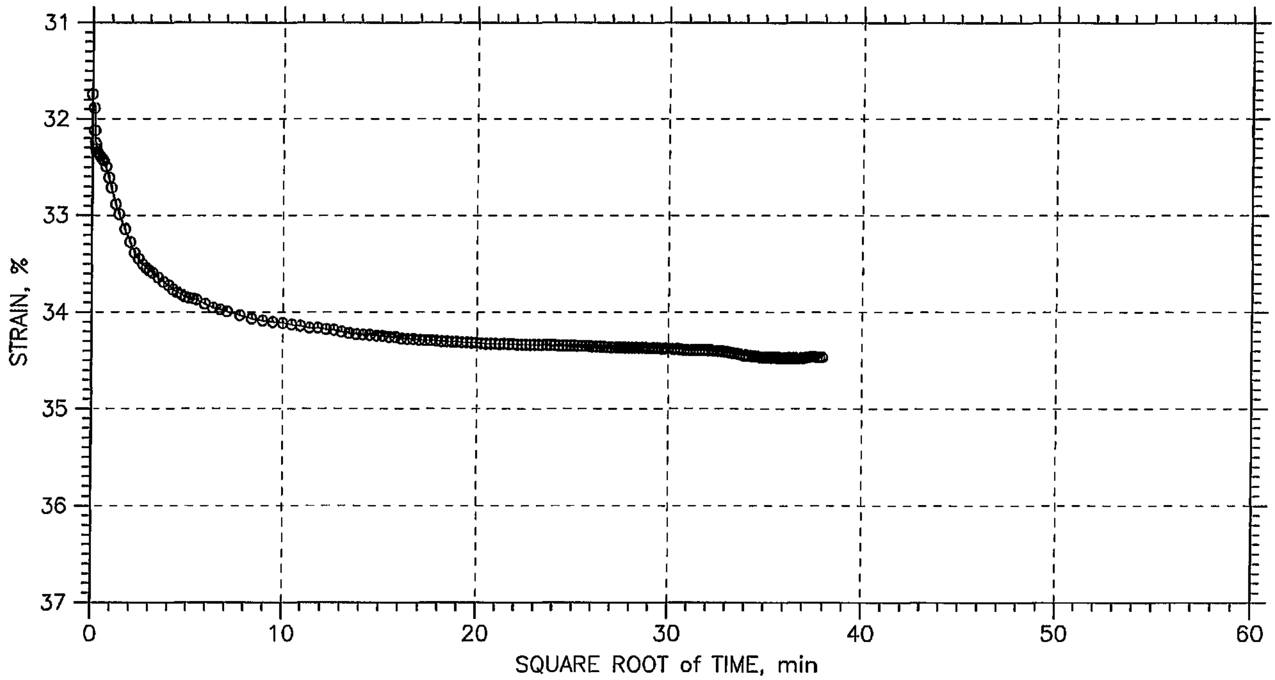
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

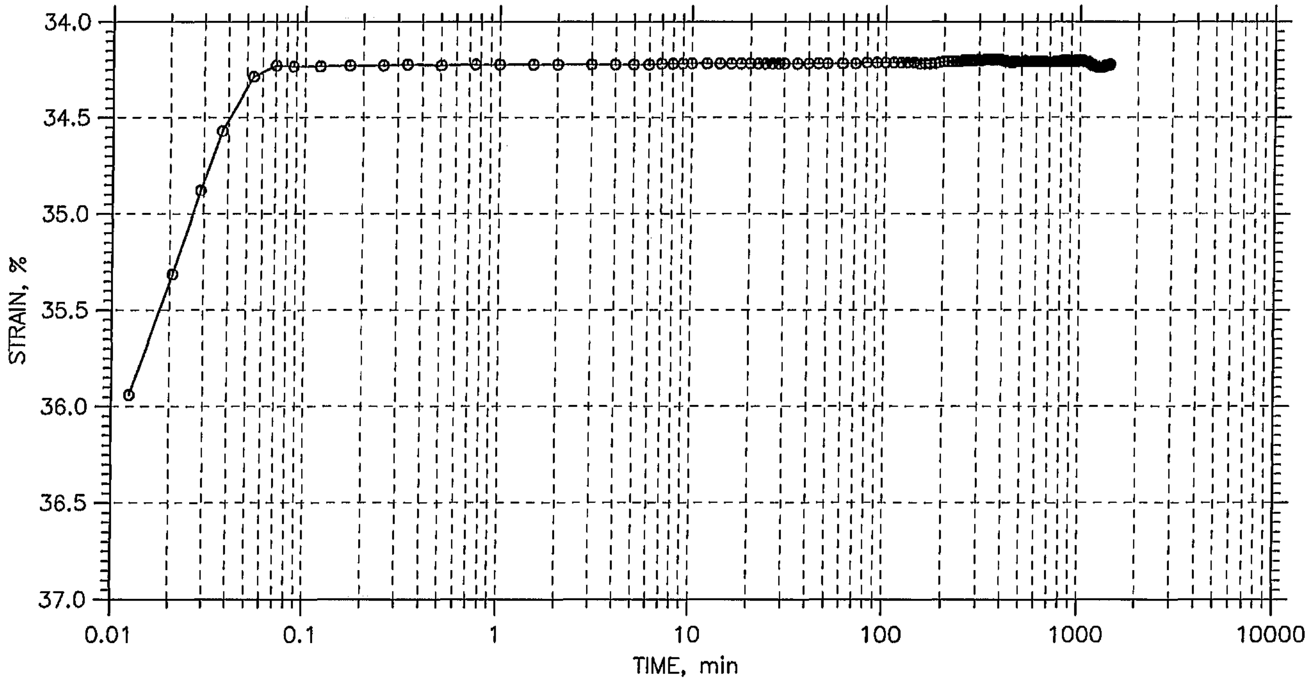
Mon, 16-JUL-2007 12:40:53

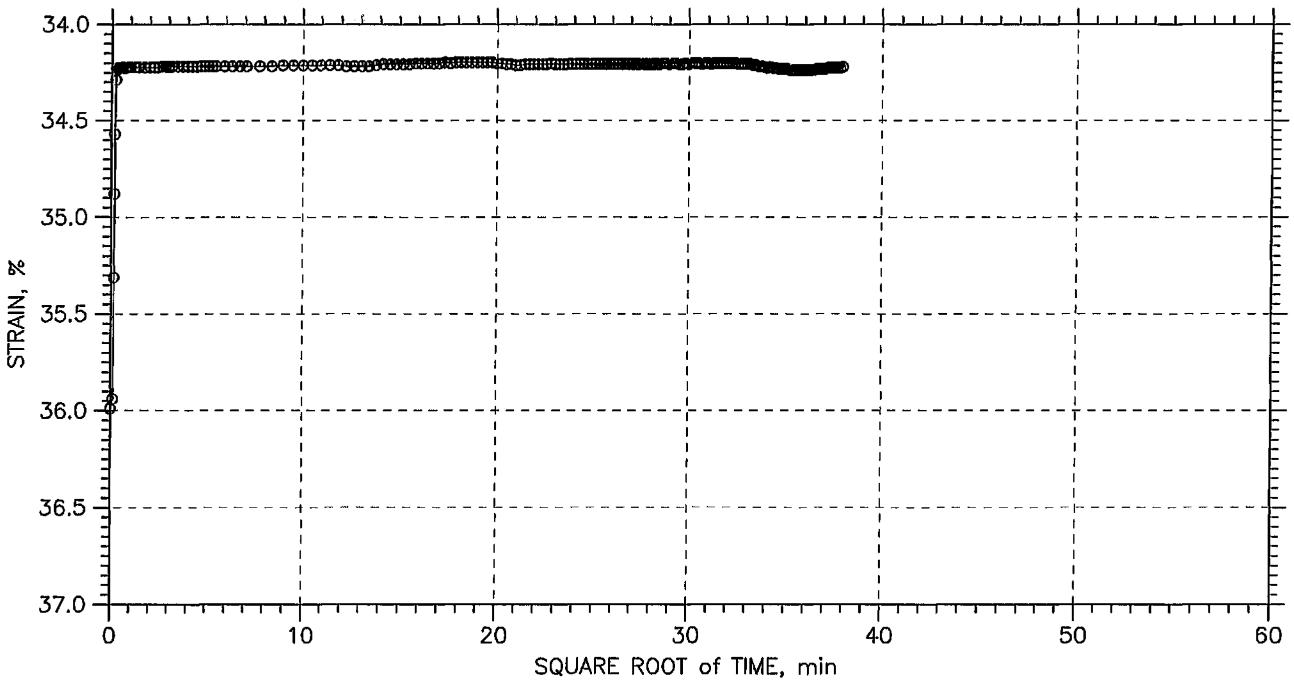
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

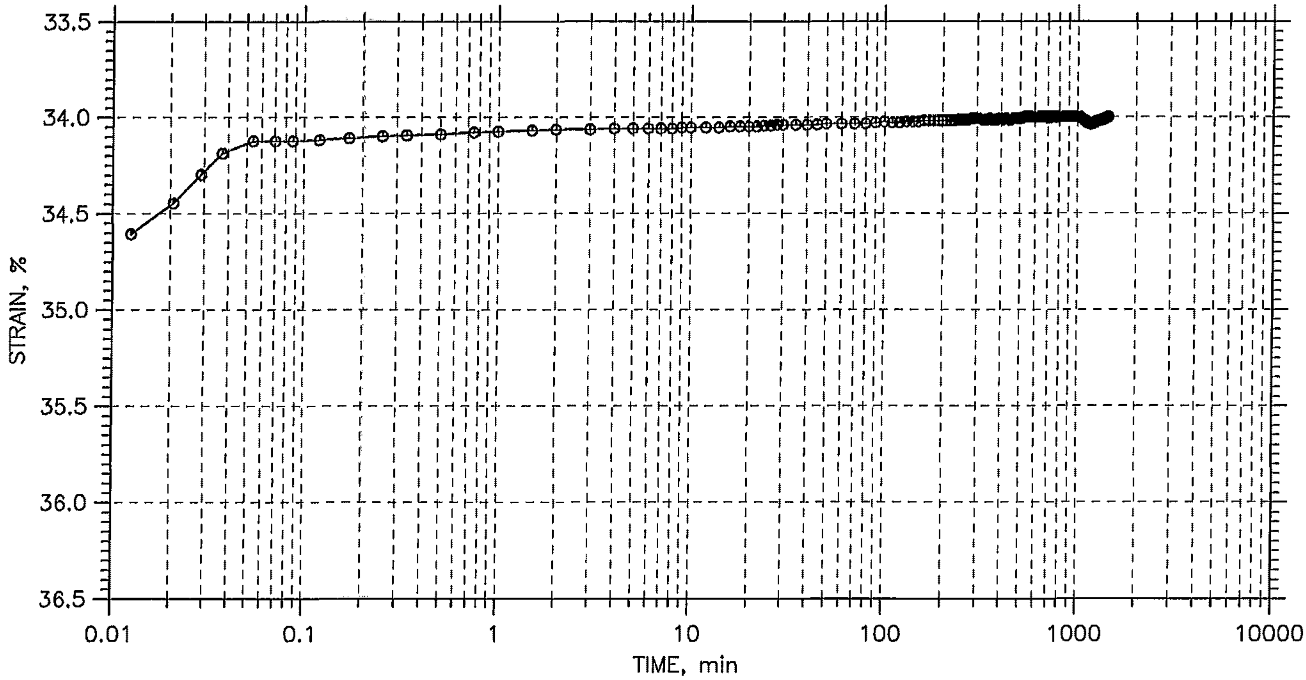
Mon, 16-JUL-2007 12:41:11

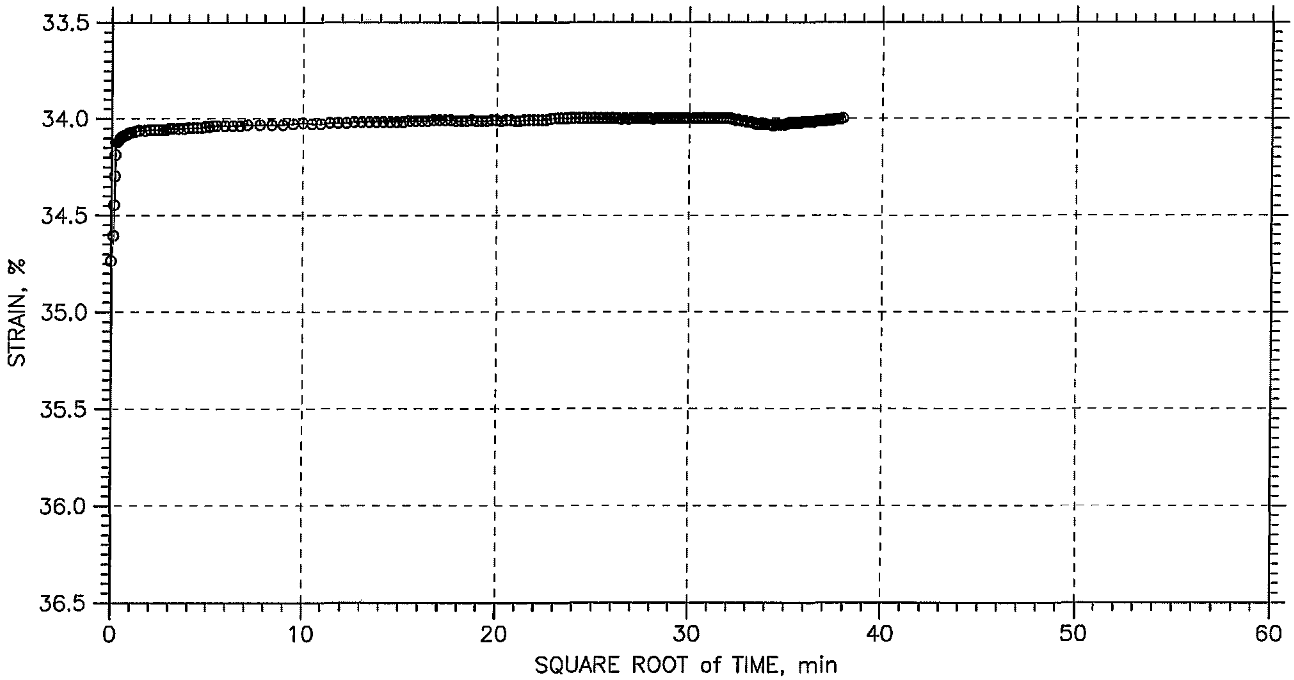
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

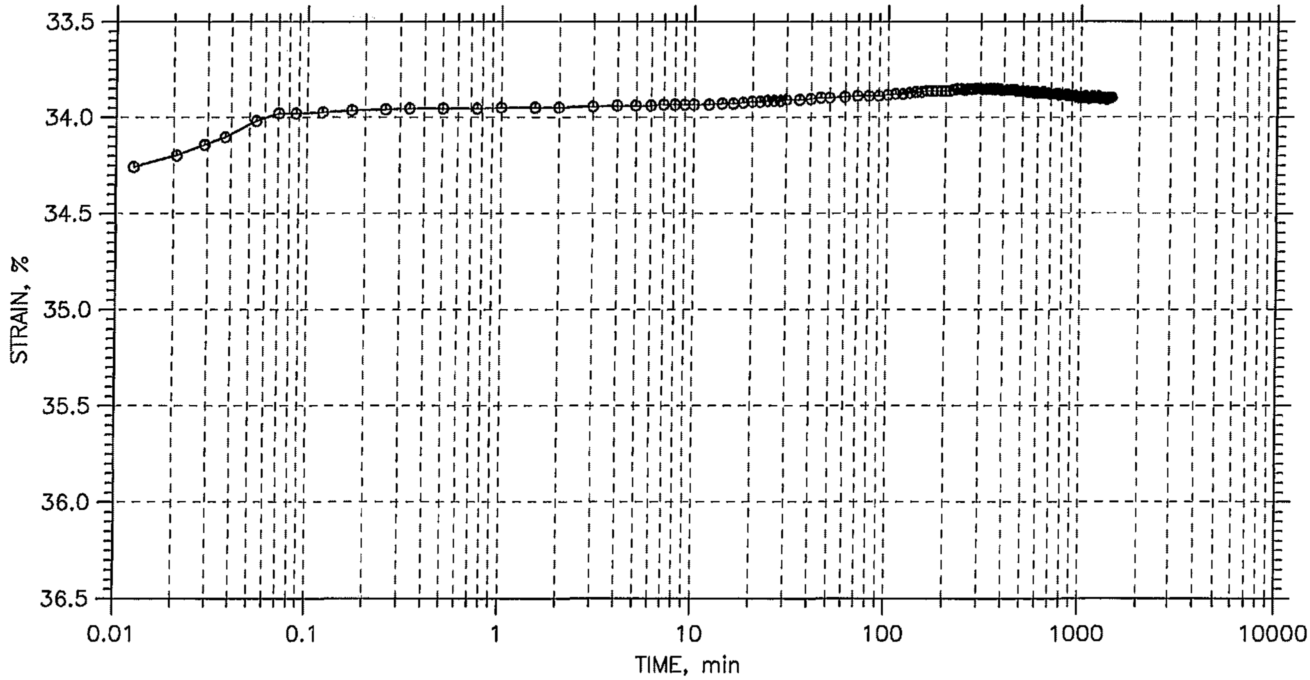
Mon, 16-JUL-2007 12:41:28

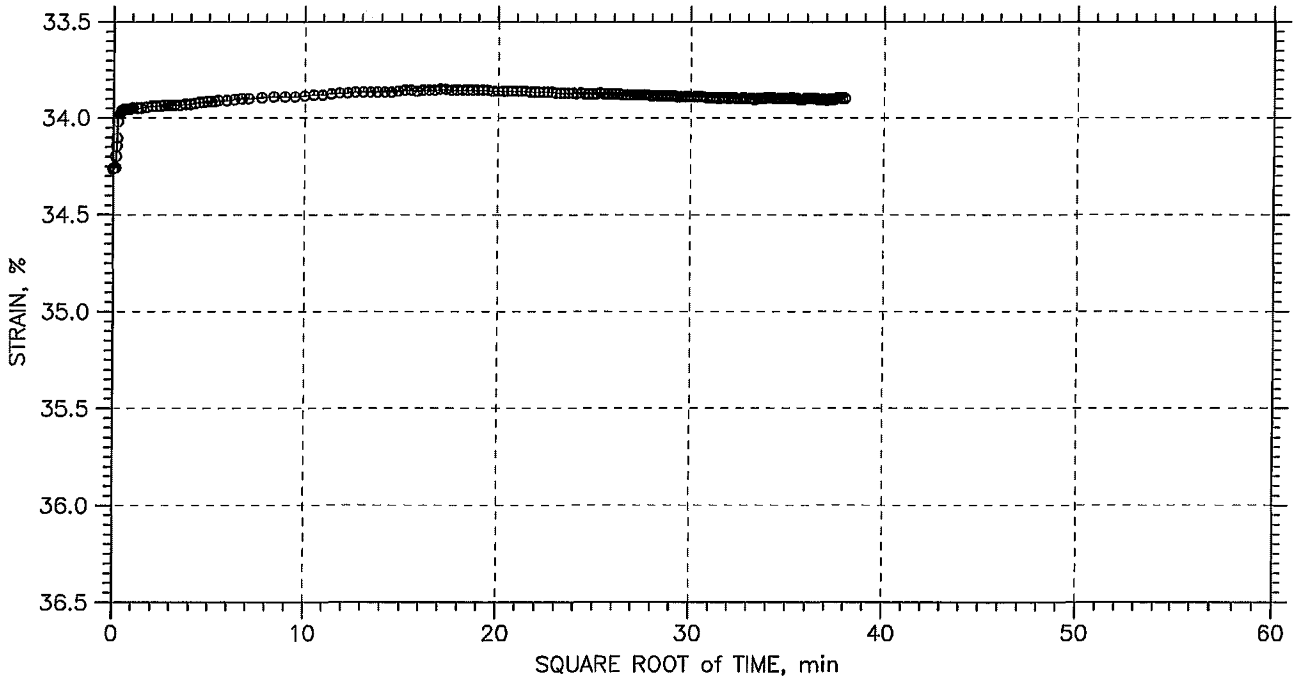
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf



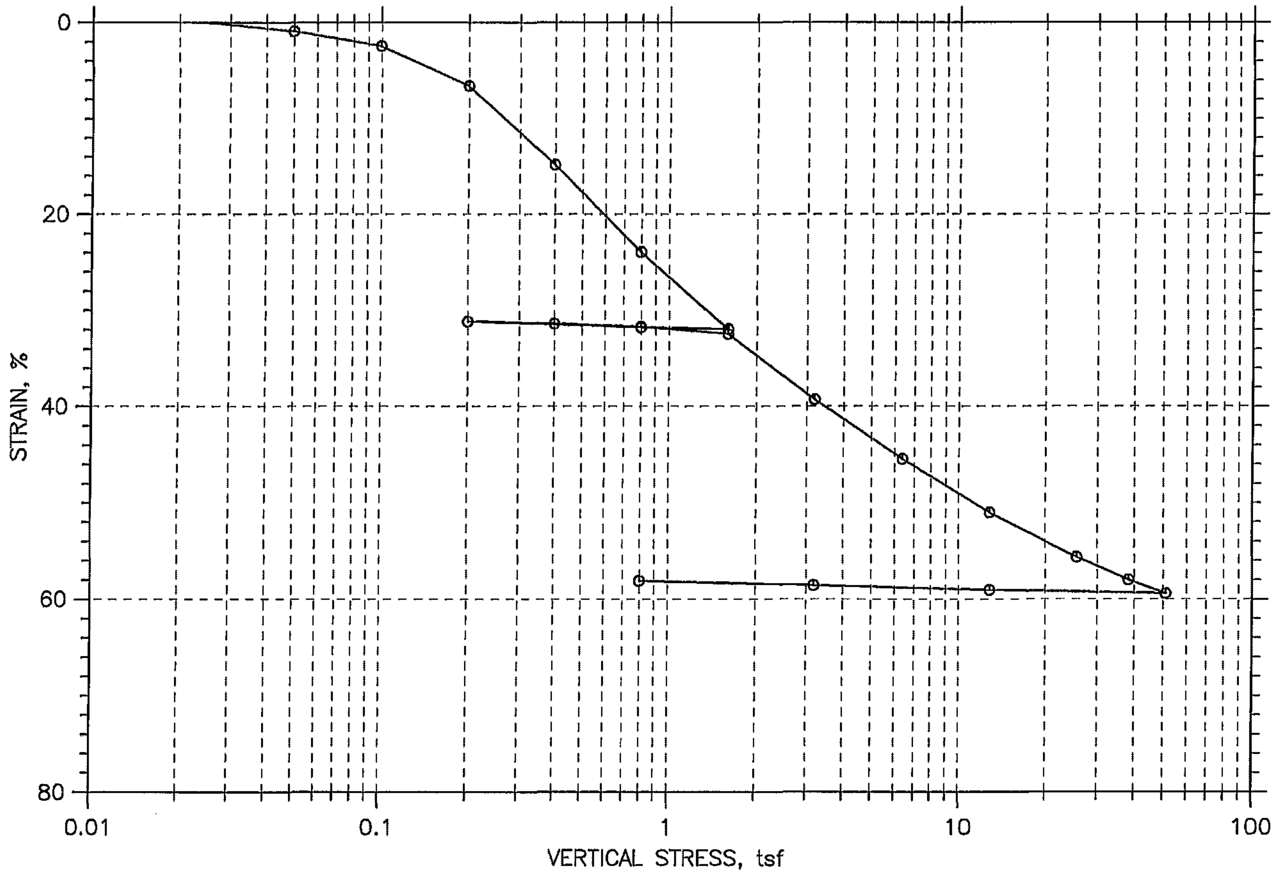


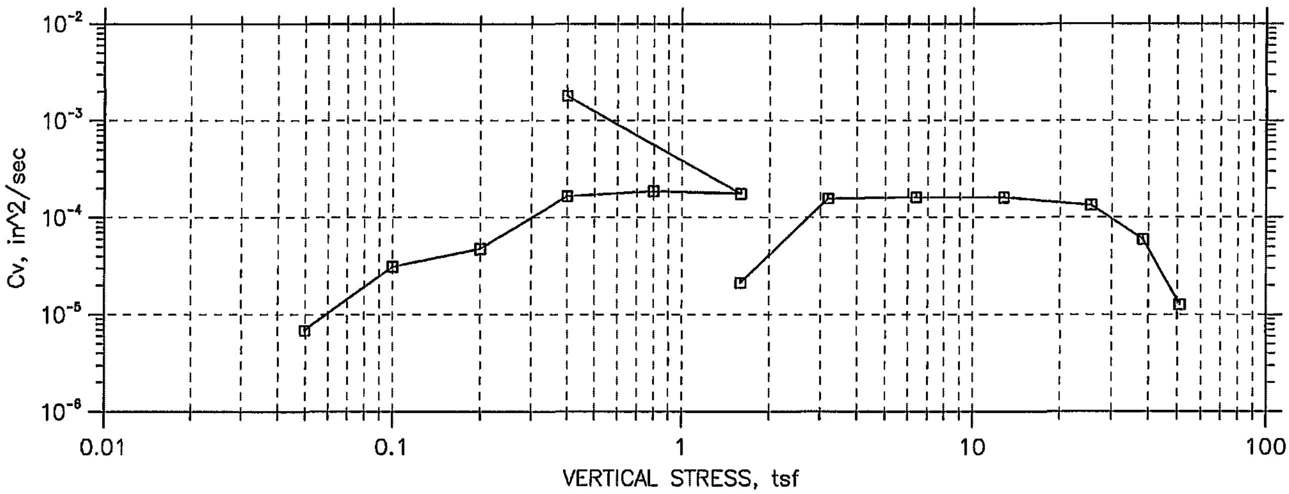
GeoTesting express, a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
	Boring No.: 20034	Tested By: md	Checked By: jdt
	Sample No.: 0317-12	Test Date: 06/14/07	Depth: 0-2 ft
	Test No.: C-32	Sample Type: tube	Elevation: ---
	Description: Moist, gray silt		
	Remarks: System R		

Mon, 16-JUL-2007 12:41:44

CONSOLIDATION TEST DATA

SUMMARY REPORT



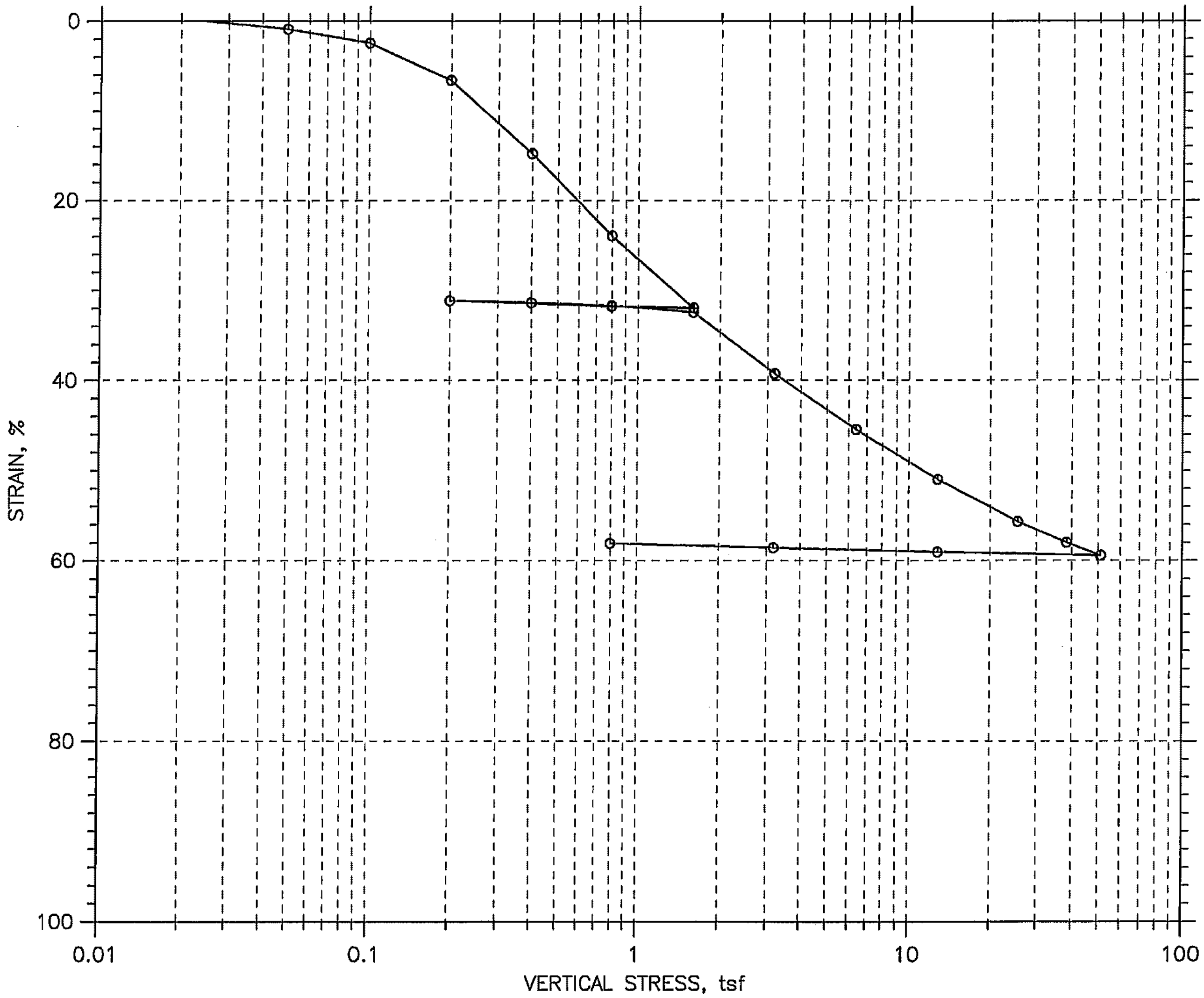


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

Mon, 06-AUG-2007 09:07:20

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	129.73	30.23
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	35.86	85.56
Compression Index: ---				Saturation, %	98.75	100.00
Diameter: 2.5 in		Height: 1 in		Void Ratio	3.07	0.71
LL: 76	PL: 41	PI: 35	GS: 2.34			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

Mon, 06-AUG-2007 09:07:22

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20036
Sample No.: 0317-19
Test No.: C-35

Location: Syracuse, NY
Tested By: md
Test Date: 07/09/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 6-8 ft
Elevation: ---

Soil Description: Wet, black silt
Remarks: System R

Measured Specific Gravity: 2.34
Initial Void Ratio: 3.07
Final Void Ratio: 0.71

Liquid Limit: 76
Plastic Limit: 41
Plasticity Index: 35

Initial Height: 1.00 in
Specimen Diameter: 2.50 in

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	Steph 999	RING		1458
Wt. Container + Wet Soil, gm	203.32	215.38	169.41	68.56
Wt. Container + Dry Soil, gm	101.76	155.44	155.44	54.59
Wt. Container, gm	8.03	109.24	109.24	8.38
Wt. Dry Soil, gm	93.73	46.202	46.202	46.21
Water Content, %	108.35	129.73	30.23	30.23
Void Ratio	---	3.07	0.71	---
Degree of Saturation, %	---	98.75	100.00	---
Dry Unit Weight, pcf	---	35.857	85.557	---

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20036
Sample No.: 0317-19
Test No.: C-35

Location: Syracuse, NY
Tested By: md
Test Date: 07/09/07
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 6-8 ft
Elevation: ---

Soil Description: Wet, black silt
Remarks: System R

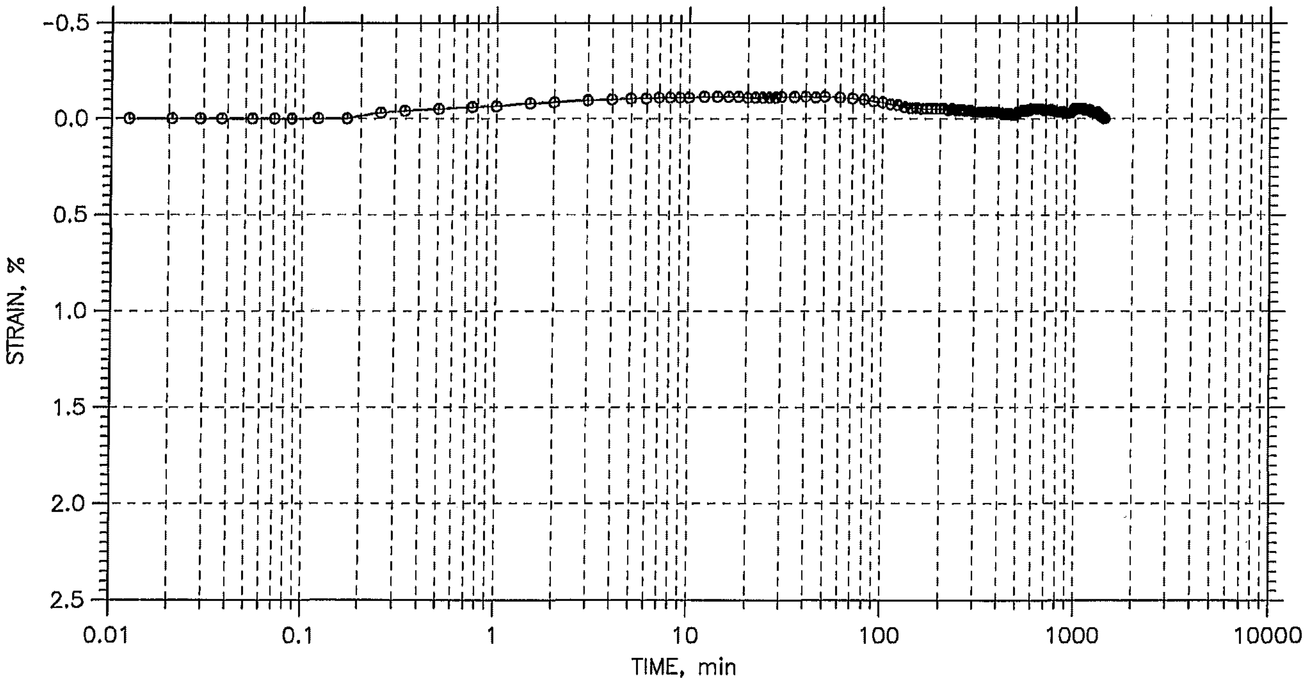
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.025	-1.557e-005	3.074	-0.00	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
2	0.05	0.008858	3.038	0.89	118.7	0.0	6.86e-006	0.00e+000	6.86e-006
3	0.1	0.0243	2.975	2.43	25.5	0.0	3.11e-005	0.00e+000	3.11e-005
4	0.2	0.06584	2.806	6.58	15.8	0.0	4.75e-005	0.00e+000	4.75e-005
5	0.4	0.1479	2.472	14.79	3.9	4.0	1.69e-004	1.63e-004	1.66e-004
6	0.8	0.2392	2.099	23.92	2.4	3.3	2.19e-004	1.62e-004	1.87e-004
7	1.6	0.3194	1.773	31.94	2.1	2.7	2.03e-004	1.57e-004	1.77e-004
8	0.8	0.3177	1.780	31.77	0.2	0.0	1.80e-003	0.00e+000	1.80e-003
9	0.2	0.3114	1.805	31.14	43.7	0.0	8.83e-006	0.00e+000	8.83e-006
10	0.4	0.3137	1.796	31.37	0.2	0.0	1.80e-003	0.00e+000	1.80e-003
11	0.8	0.317	1.783	31.70	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
12	1.6	0.3242	1.753	32.42	18.0	0.0	2.11e-005	0.00e+000	2.11e-005
13	3.2	0.3925	1.475	39.25	2.0	2.3	1.68e-004	1.47e-004	1.57e-004
14	6.4	0.4544	1.223	45.44	1.6	1.8	1.76e-004	1.50e-004	1.62e-004
15	12.8	0.51	0.996	51.00	1.4	1.3	1.52e-004	1.68e-004	1.60e-004
16	25.6	0.5566	0.806	55.66	1.3	0.0	1.34e-004	0.00e+000	1.34e-004
17	38.4	0.5799	0.712	57.99	2.6	0.0	5.97e-005	0.00e+000	5.97e-005
18	51.2	0.5942	0.653	59.42	11.1	0.0	1.27e-005	0.00e+000	1.27e-005
19	12.8	0.5905	0.668	59.05	0.1	0.0	2.63e-003	0.00e+000	2.63e-003
20	3.2	0.5857	0.688	58.57	0.4	0.0	3.12e-004	0.00e+000	3.12e-004
21	0.8	0.5809	0.707	58.09	13.3	0.0	1.07e-005	0.00e+000	1.07e-005

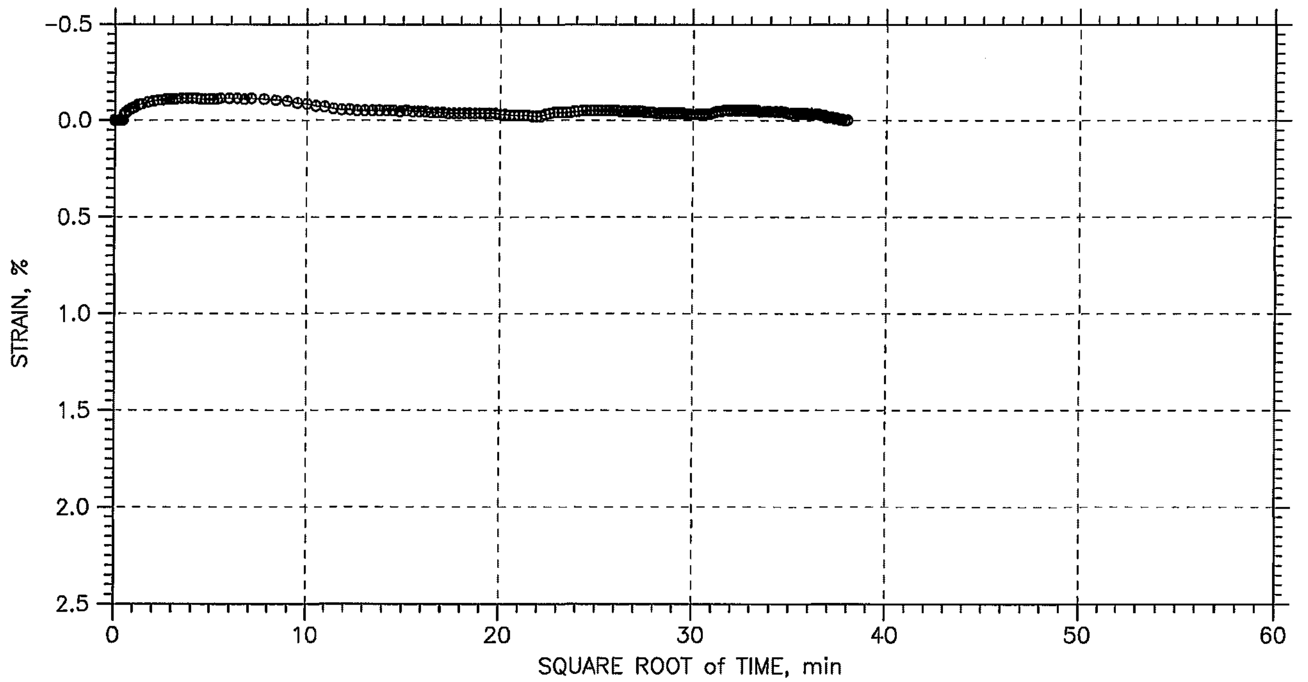
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

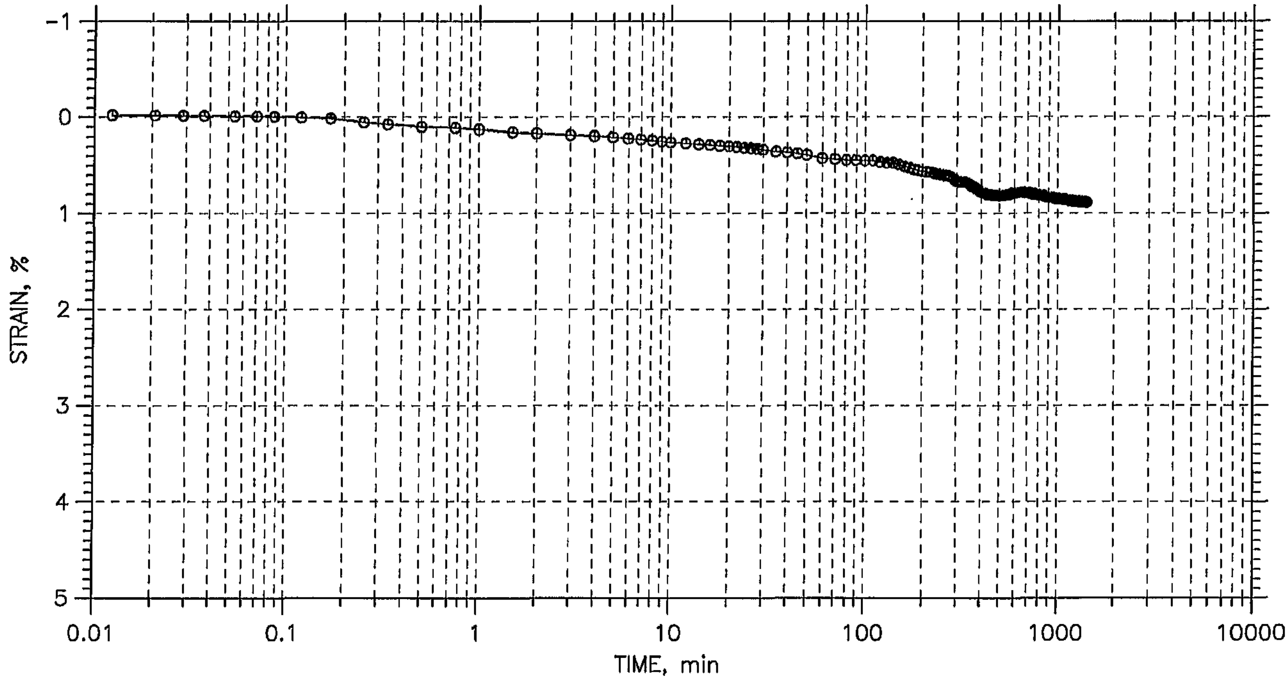
Mon, 06-AUG-2007 09:07:33

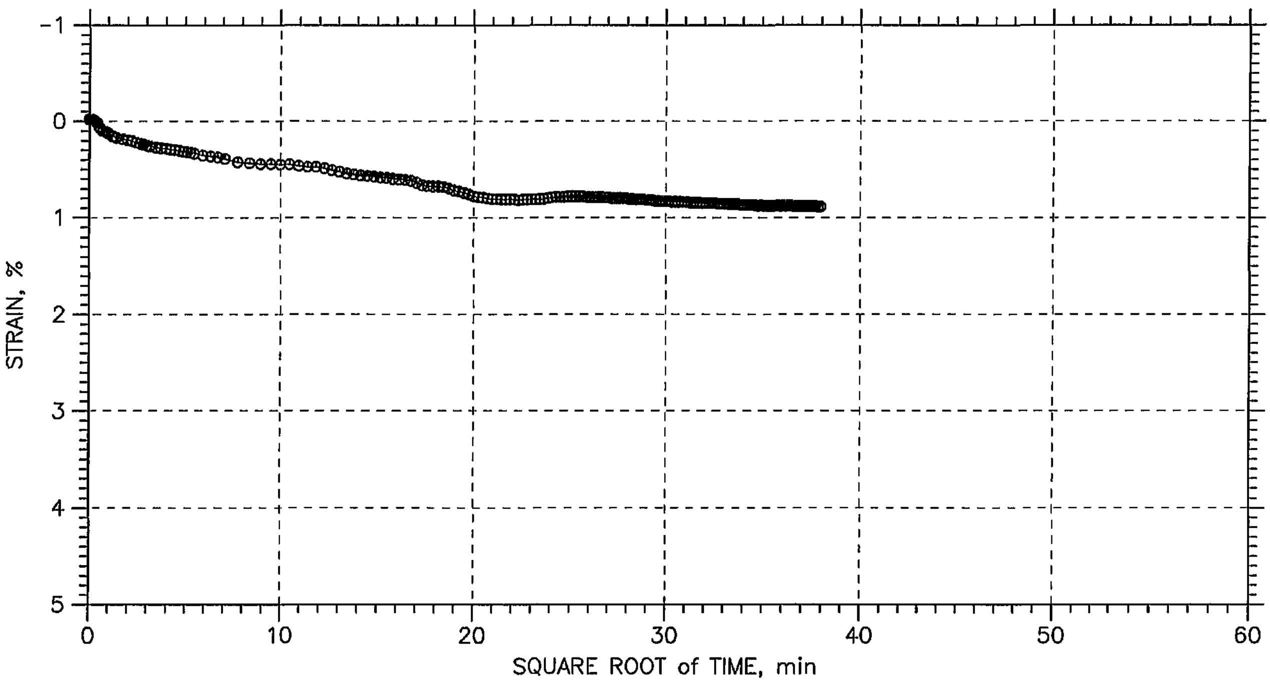
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

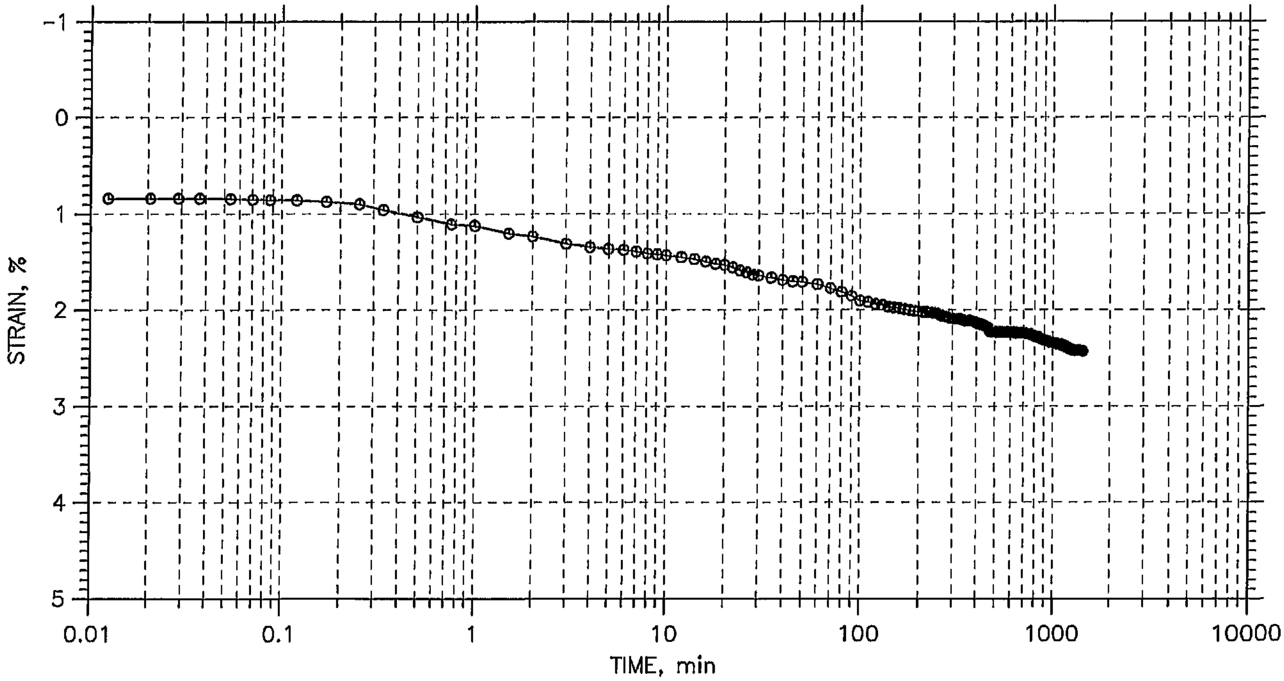
Mon, 06-AUG-2007 09:07:55

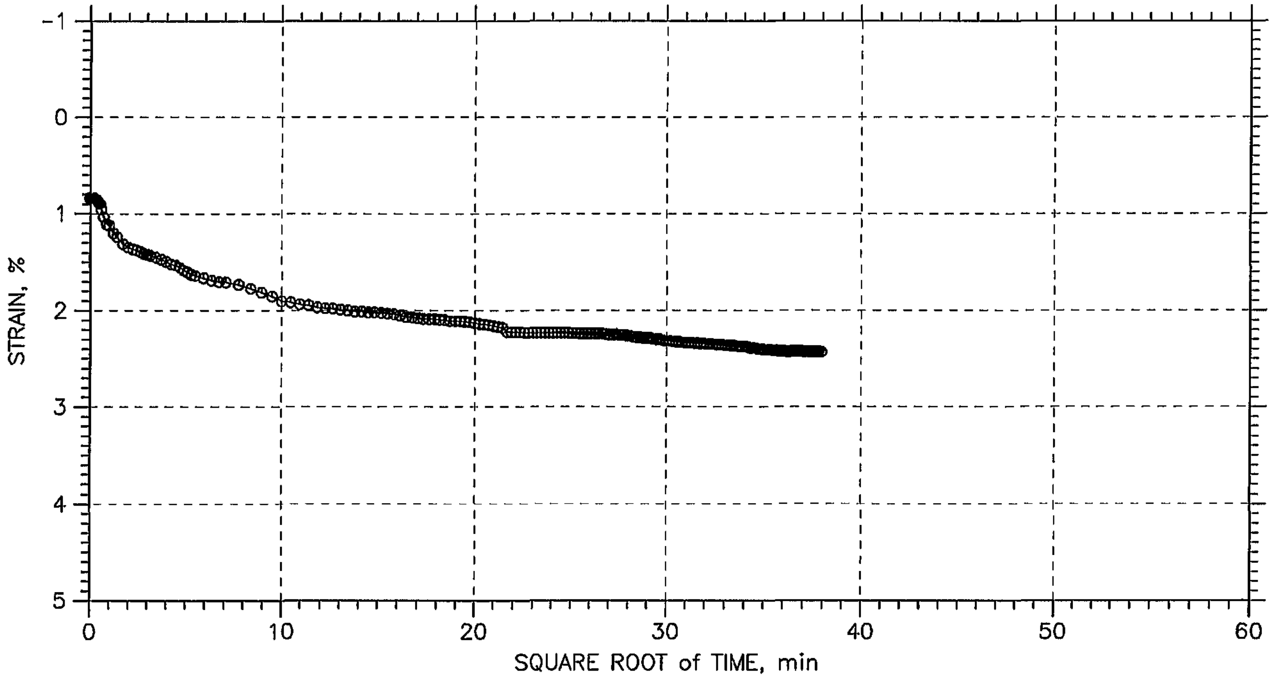
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

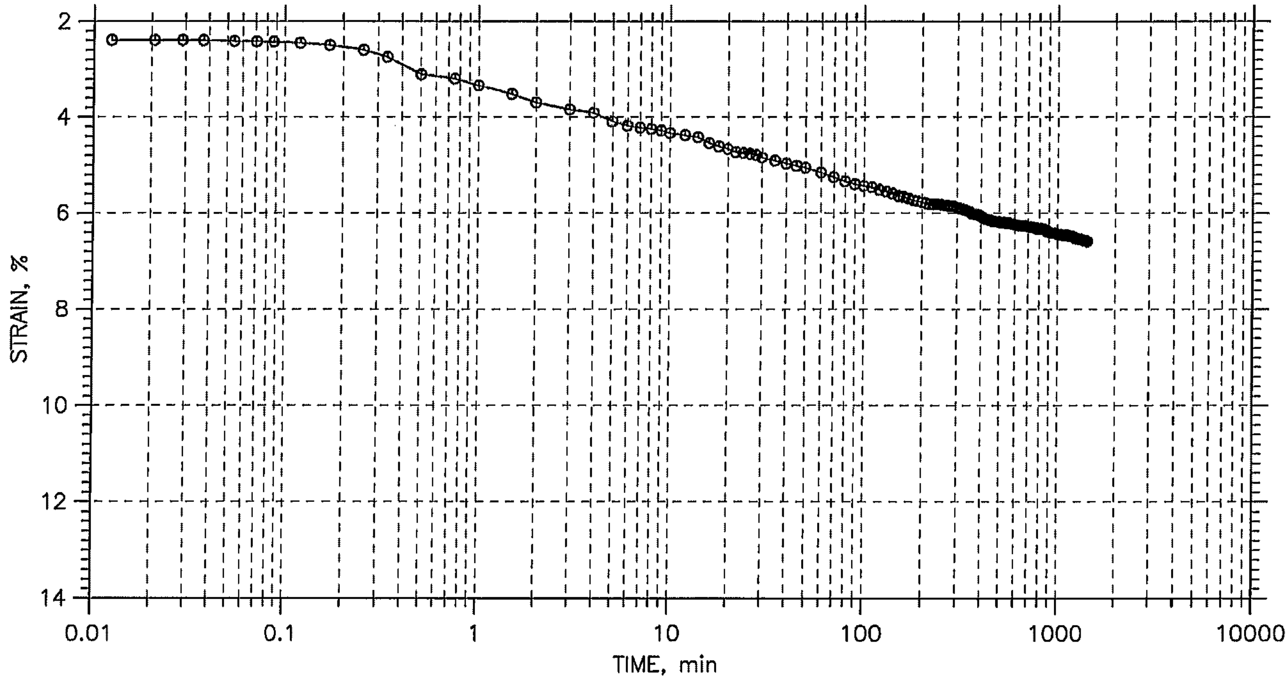
Mon, 06-AUG-2007 09:08:07

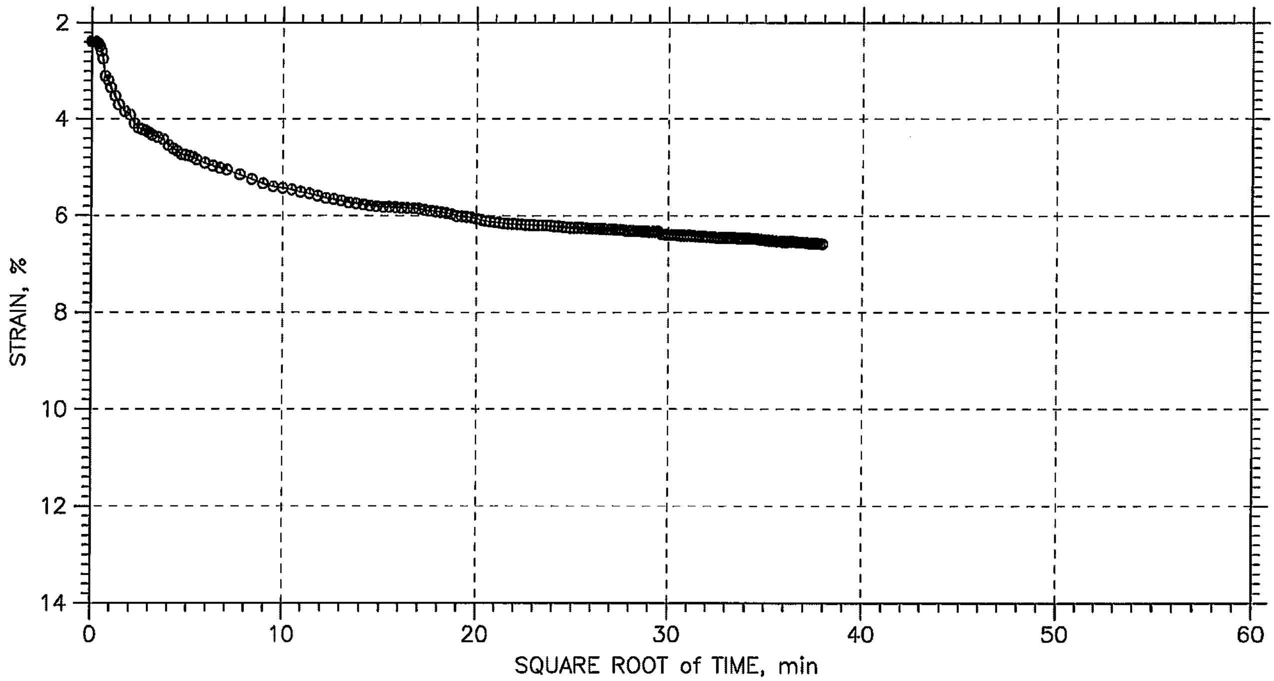
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

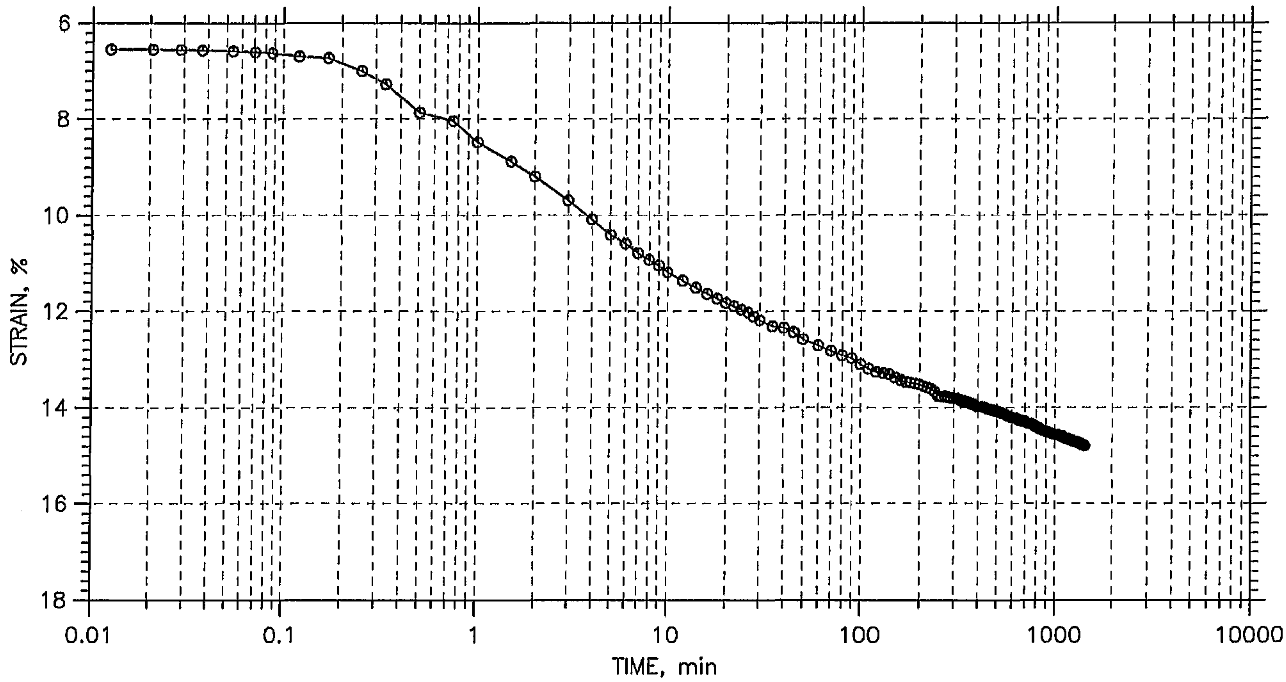
Mon, 06-AUG-2007 09:08:28

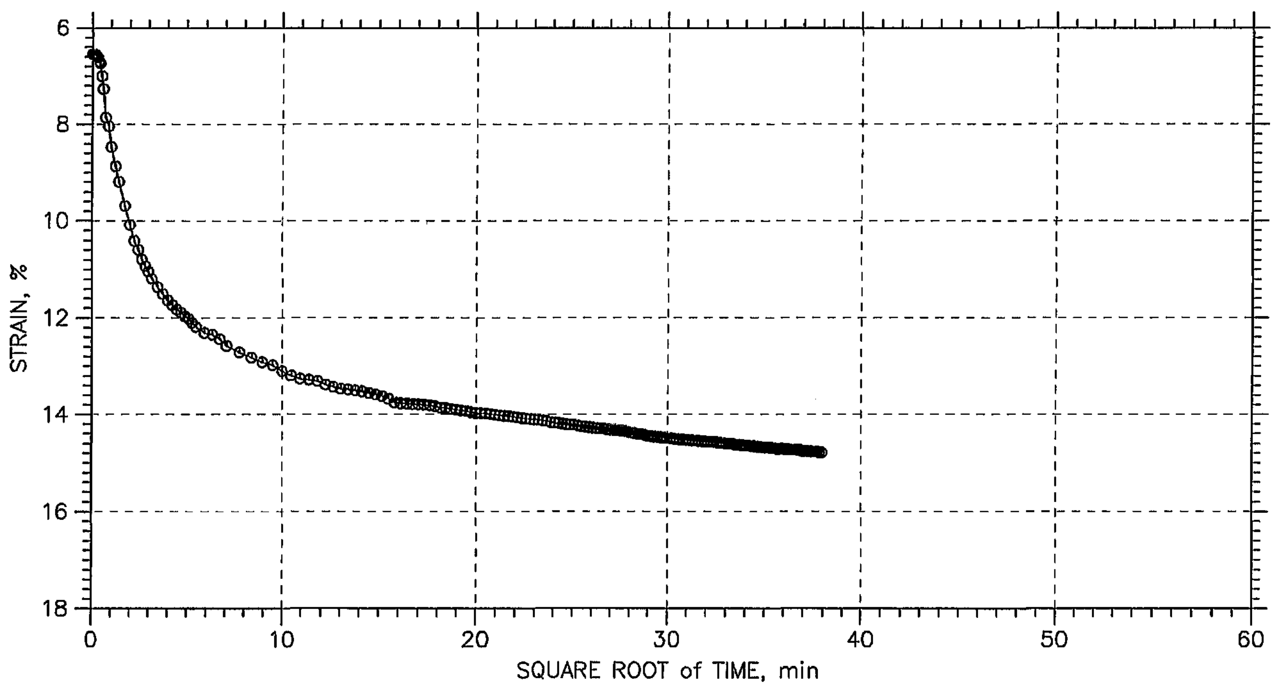
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

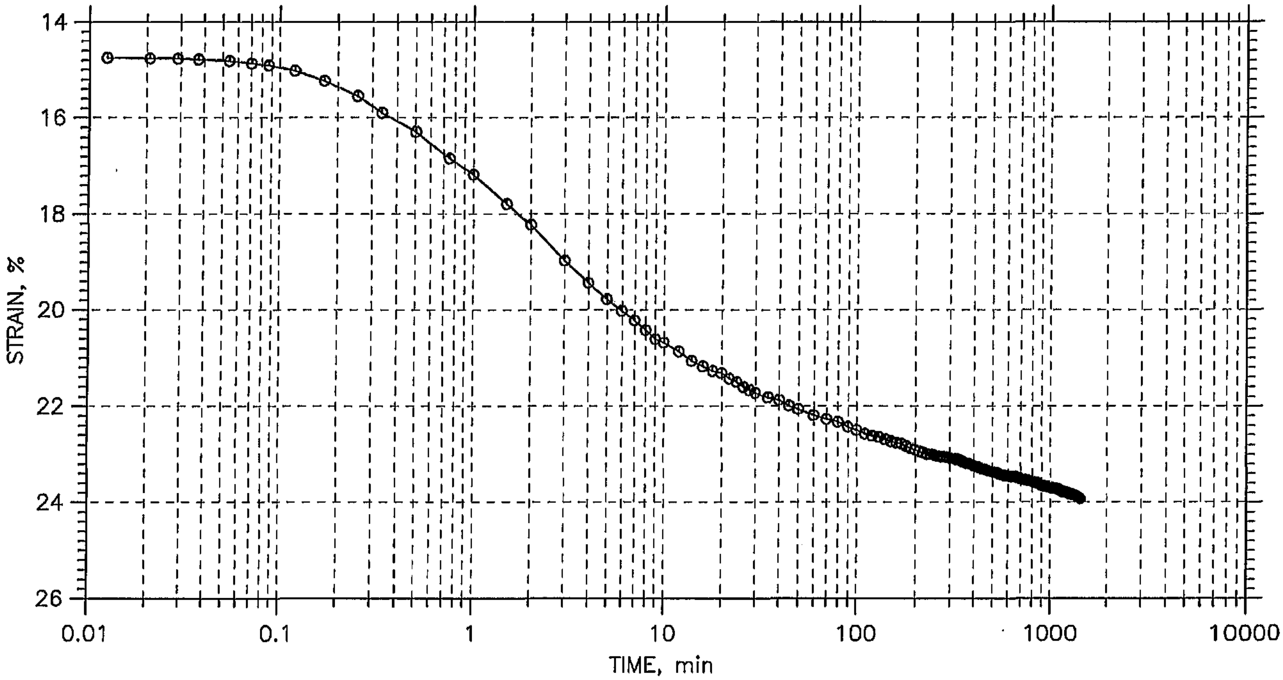
Mon, 06-AUG-2007 09:08:44

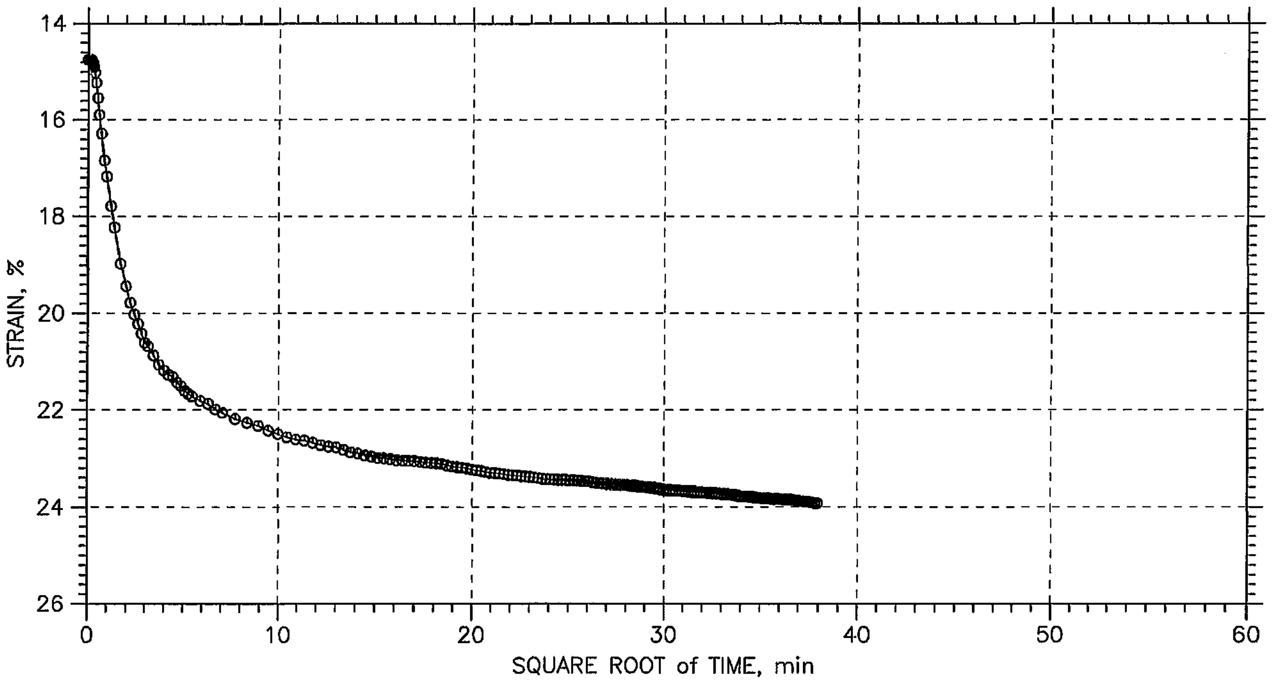
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

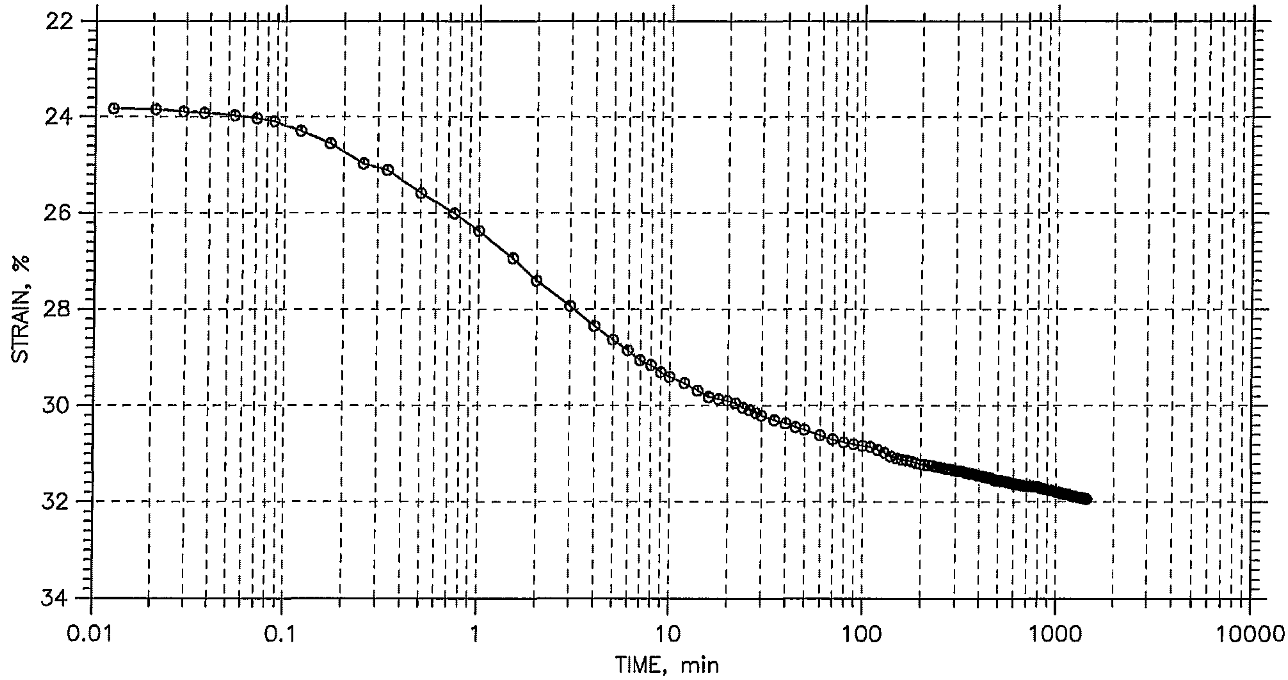
Mon, 06-AUG-2007 09:08:51

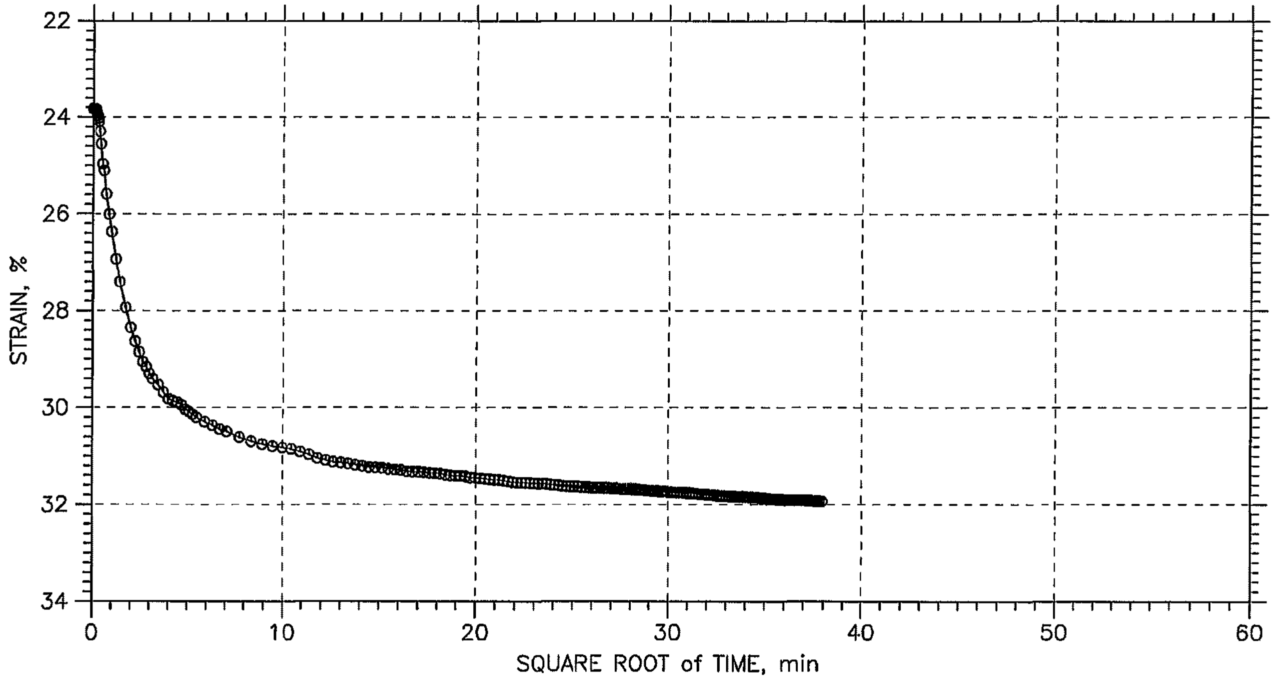
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

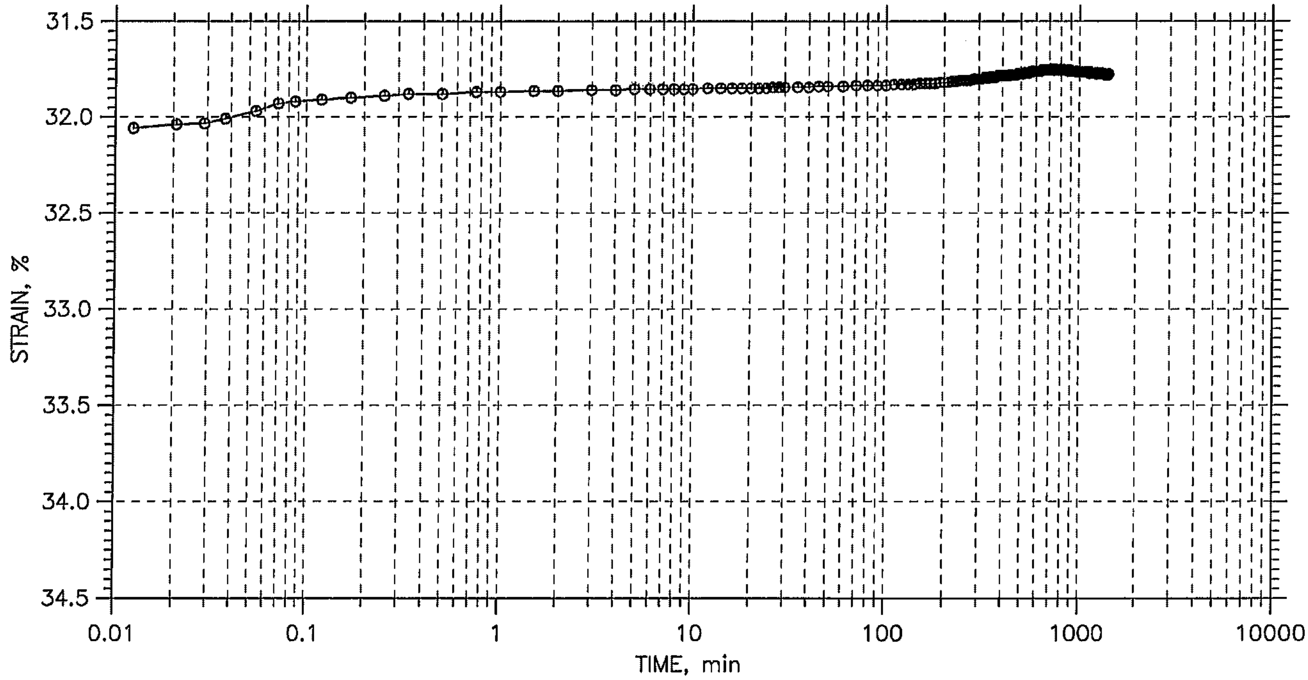
Mon, 06-AUG-2007 09:09:00

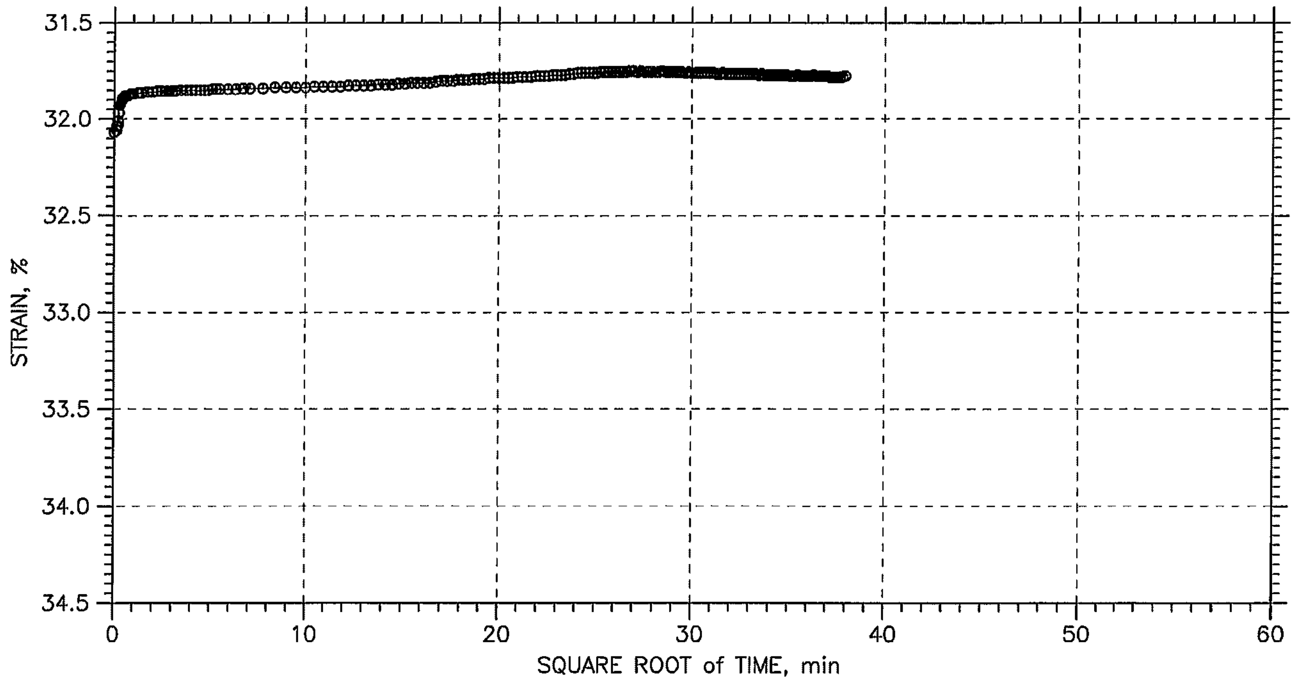
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

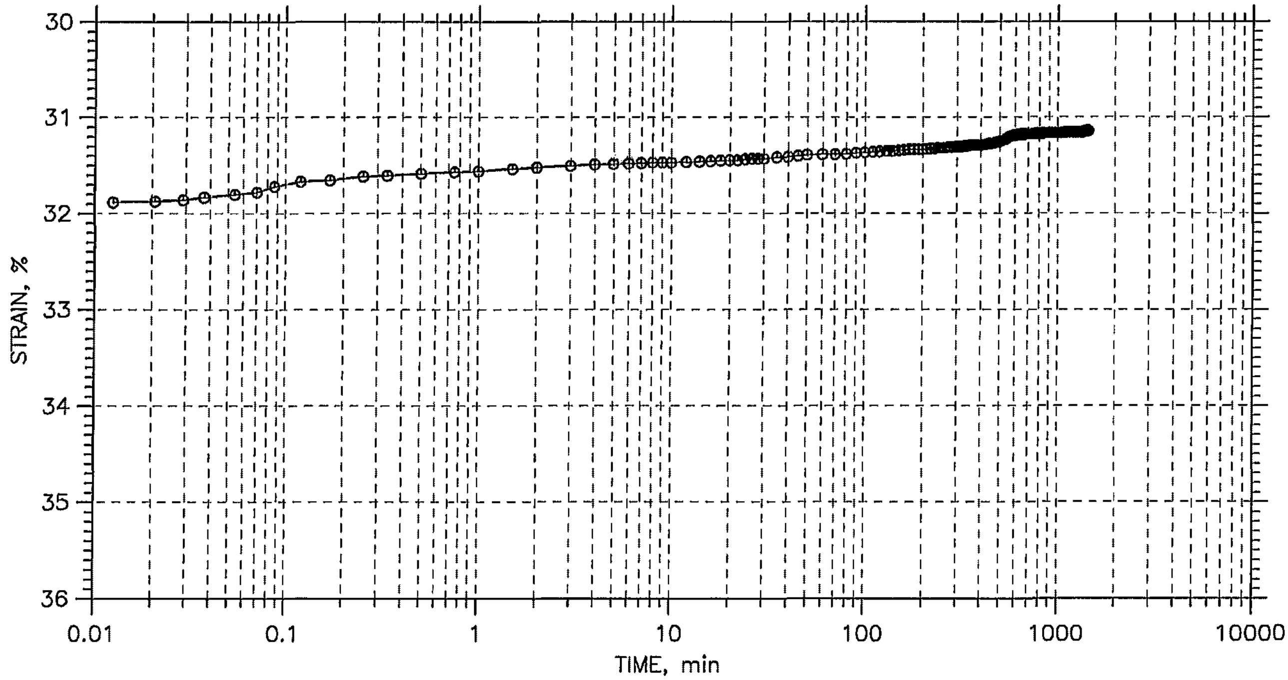
Mon, 06-AUG-2007 09:09:33

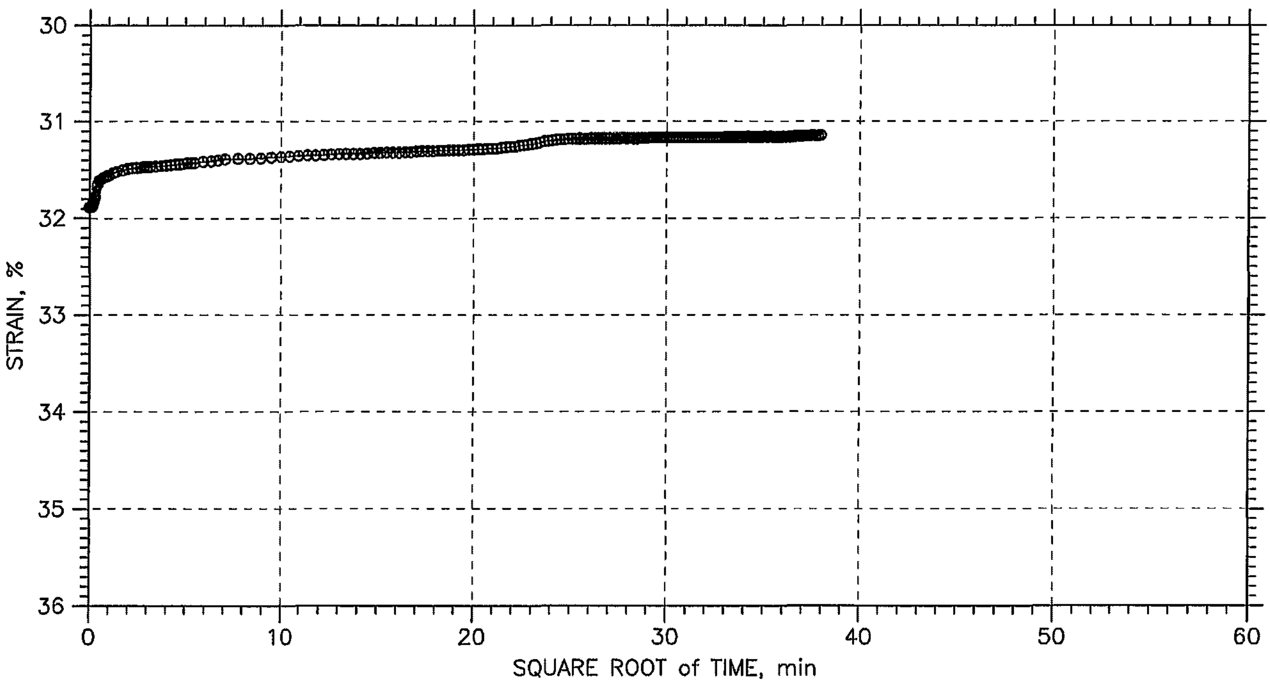
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

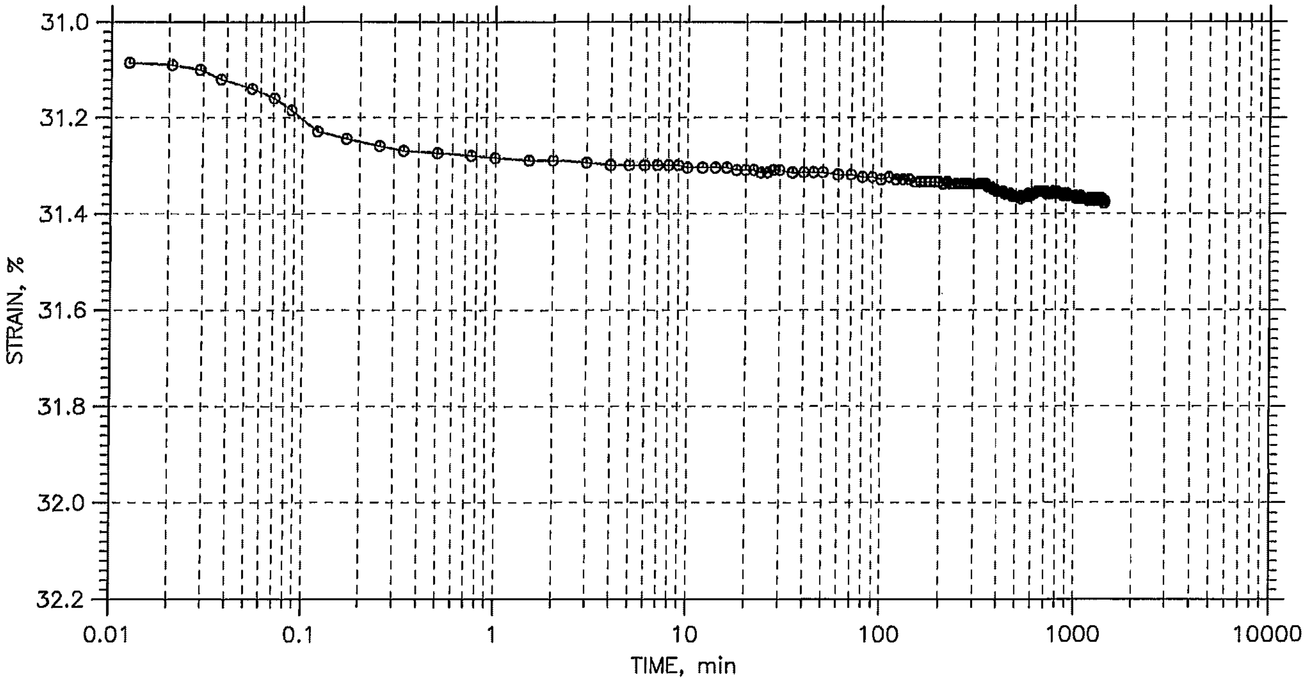
Mon, 06-AUG-2007 09:10:19

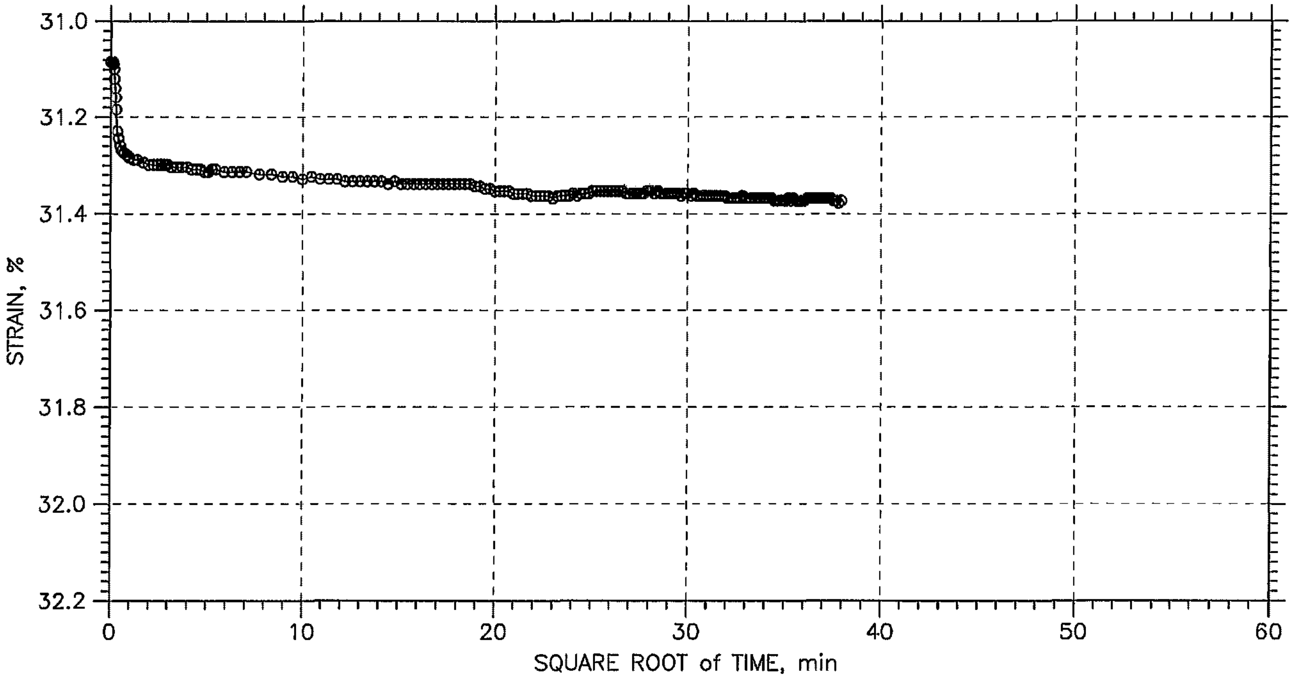
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

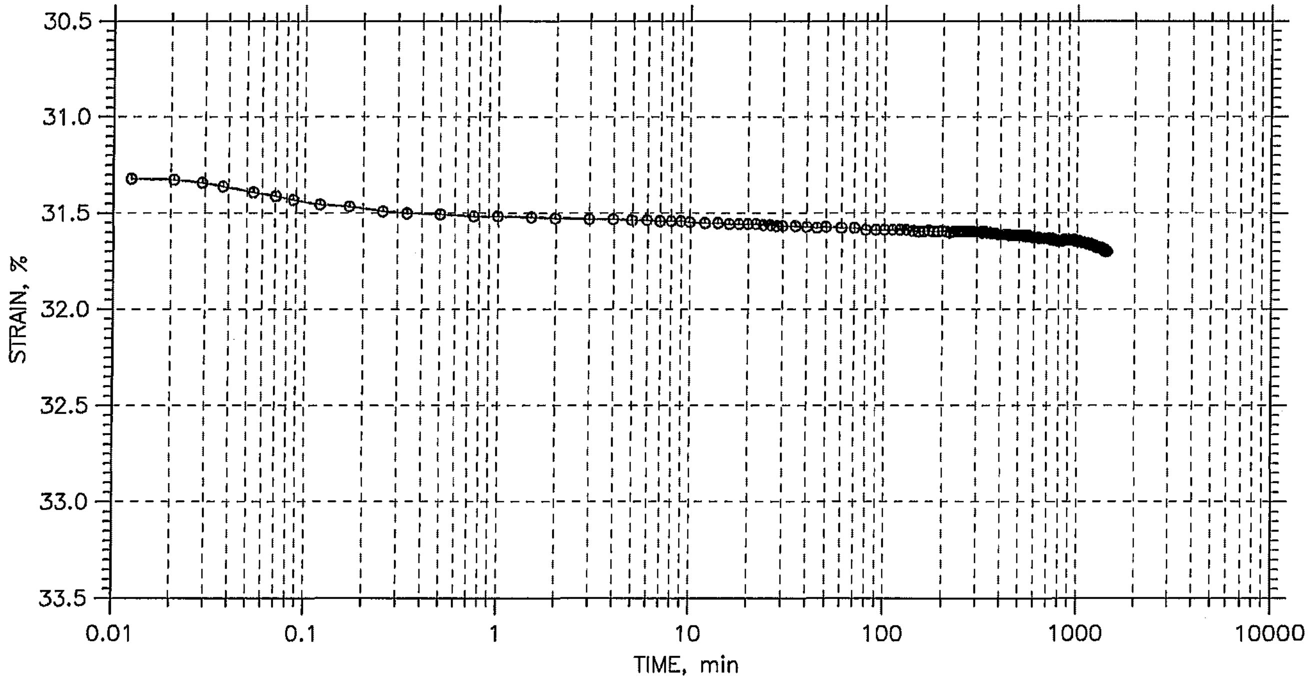
Mon, 06-AUG-2007 09:10:45

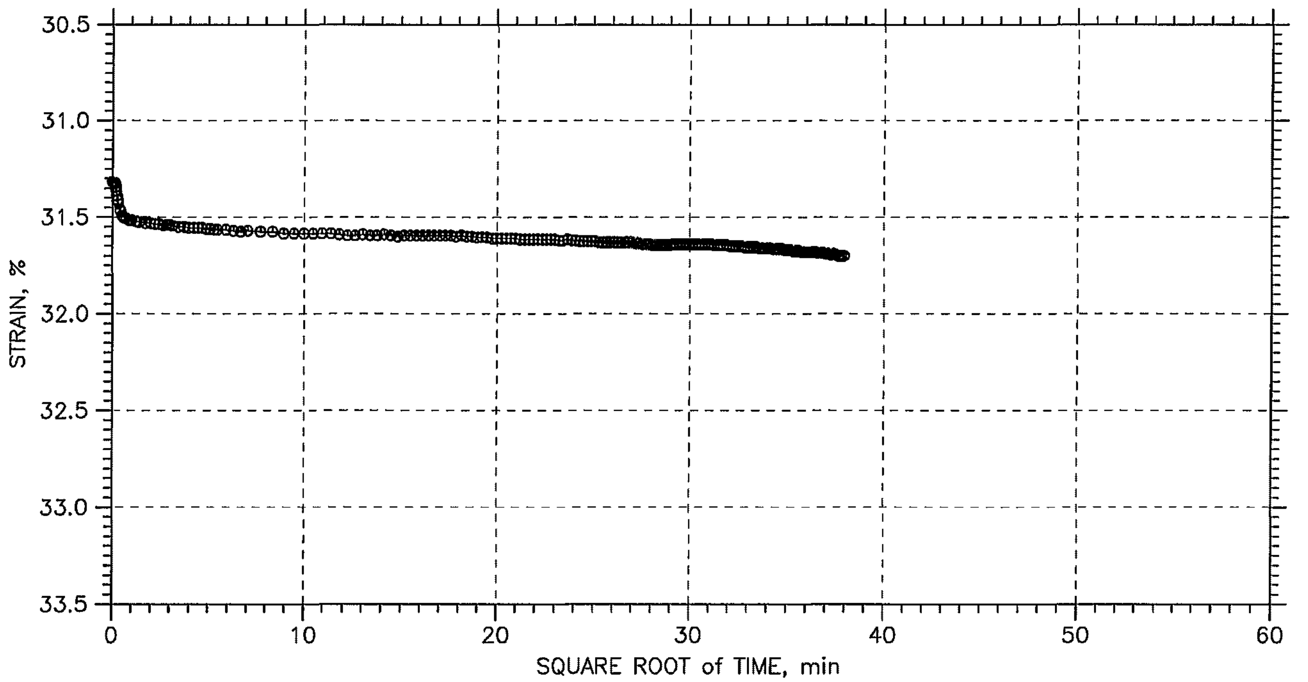
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

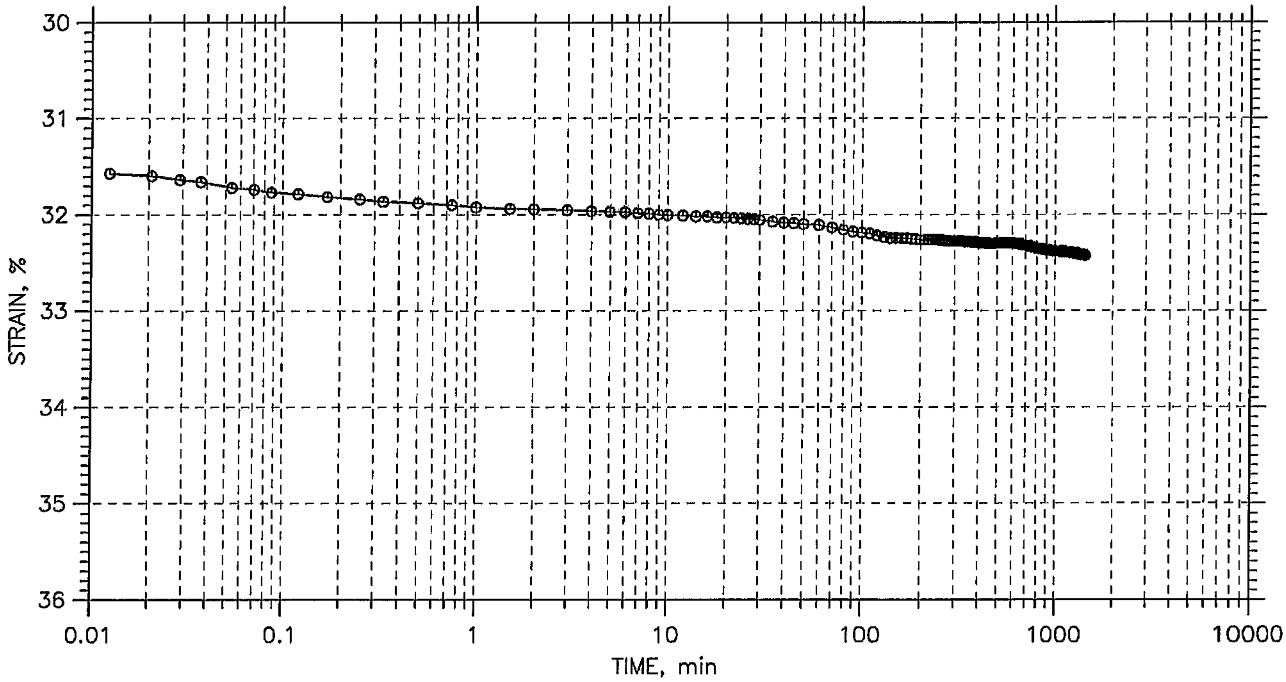
Mon, 06-AUG-2007 09:11:07

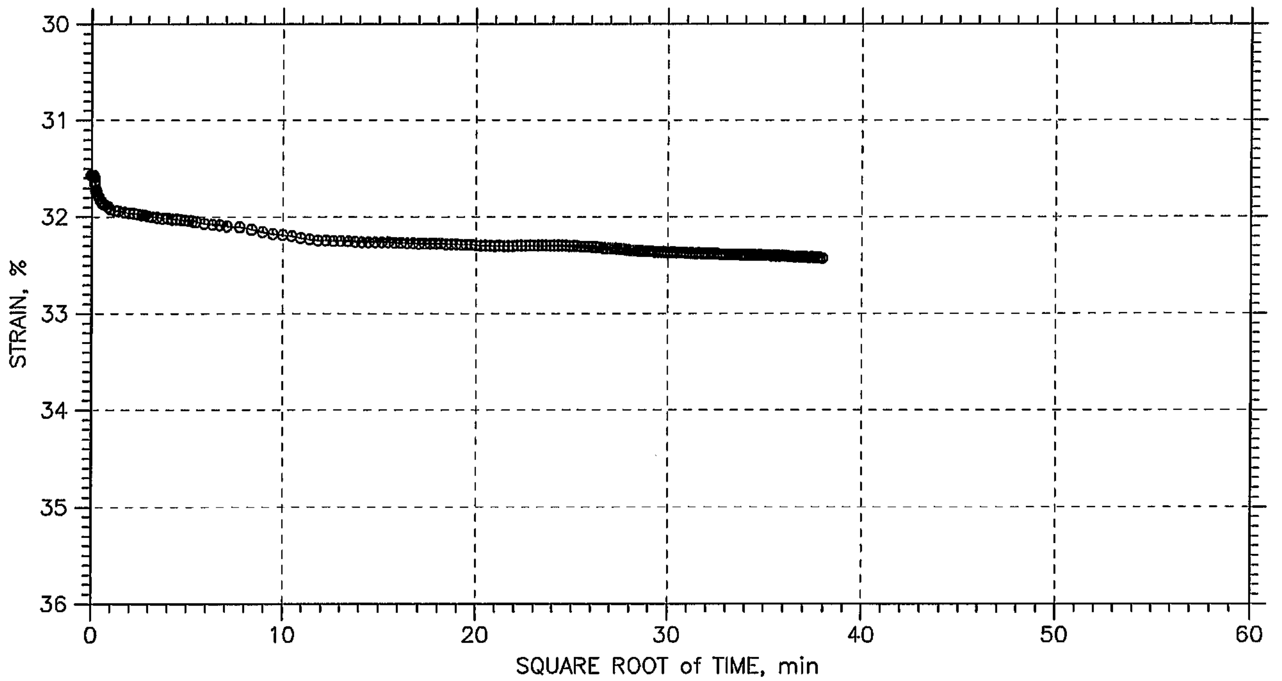
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

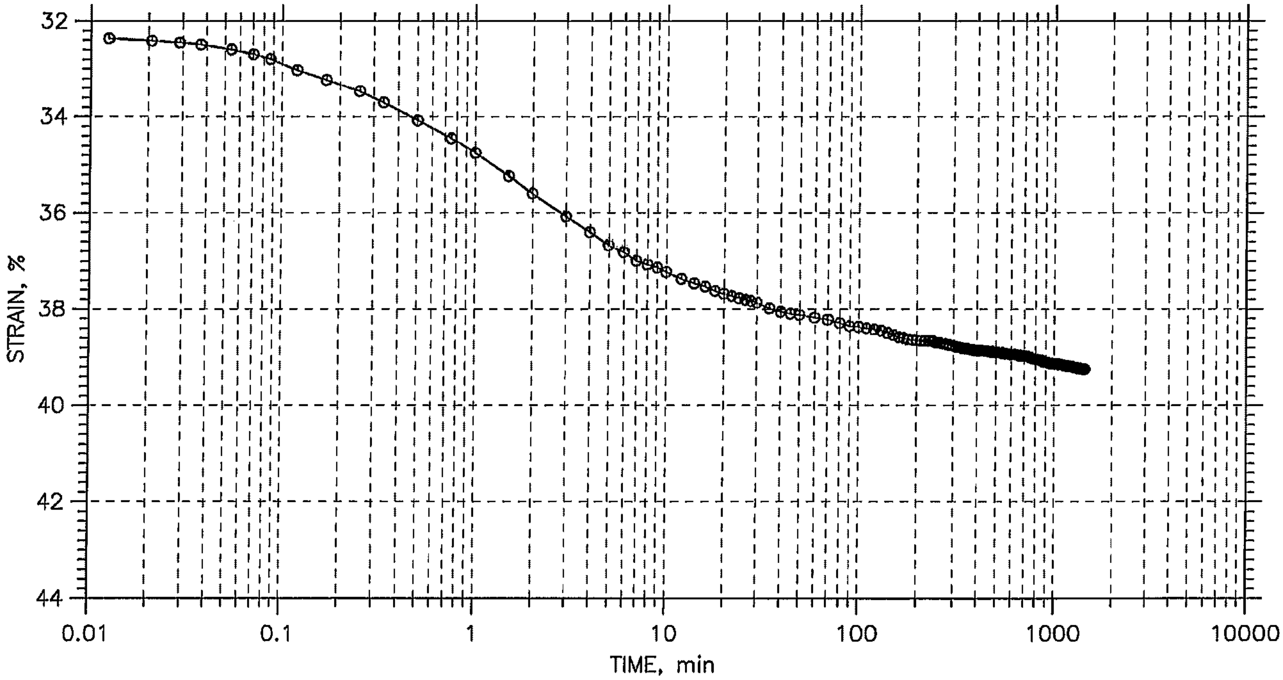
Mon, 06-AUG-2007 09:11:22

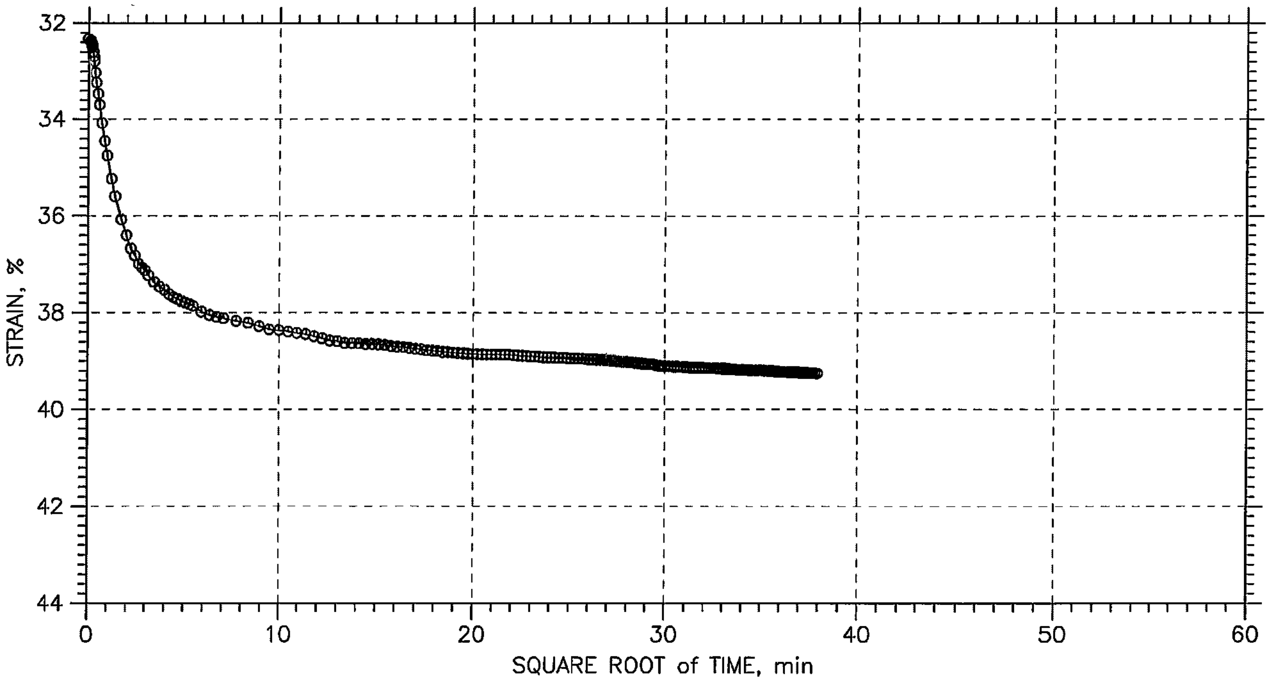
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

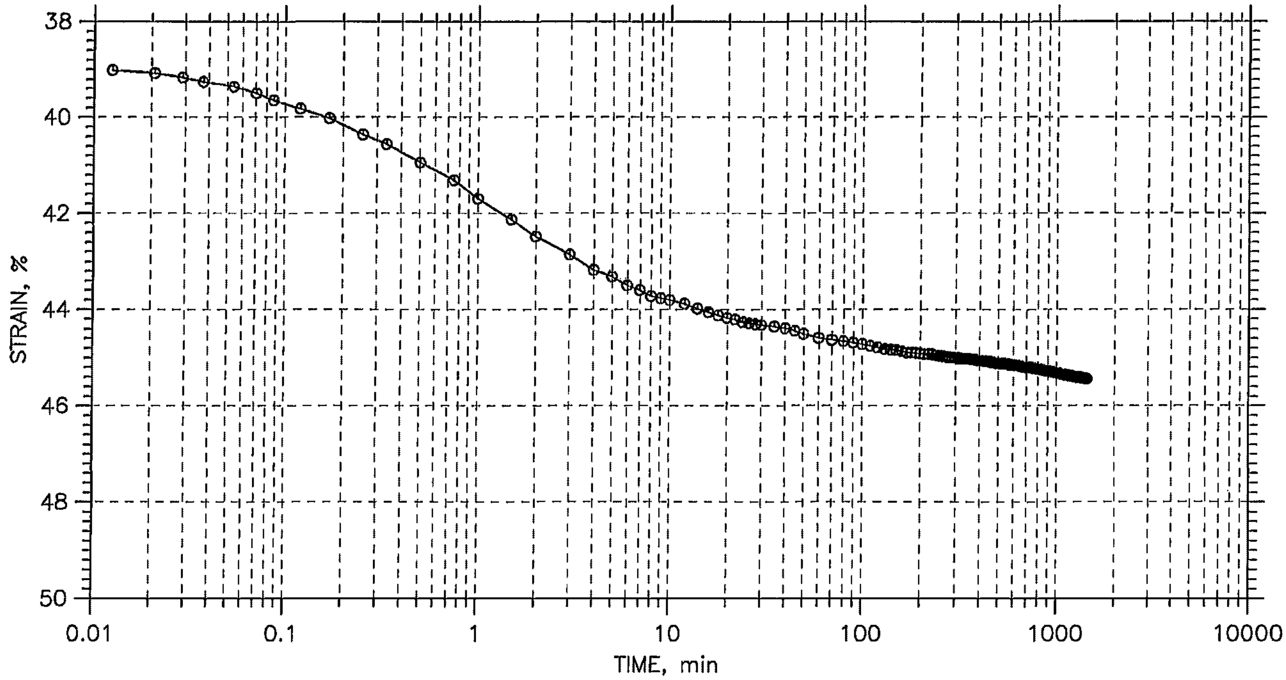
Mon, 06-AUG-2007 09:11:39

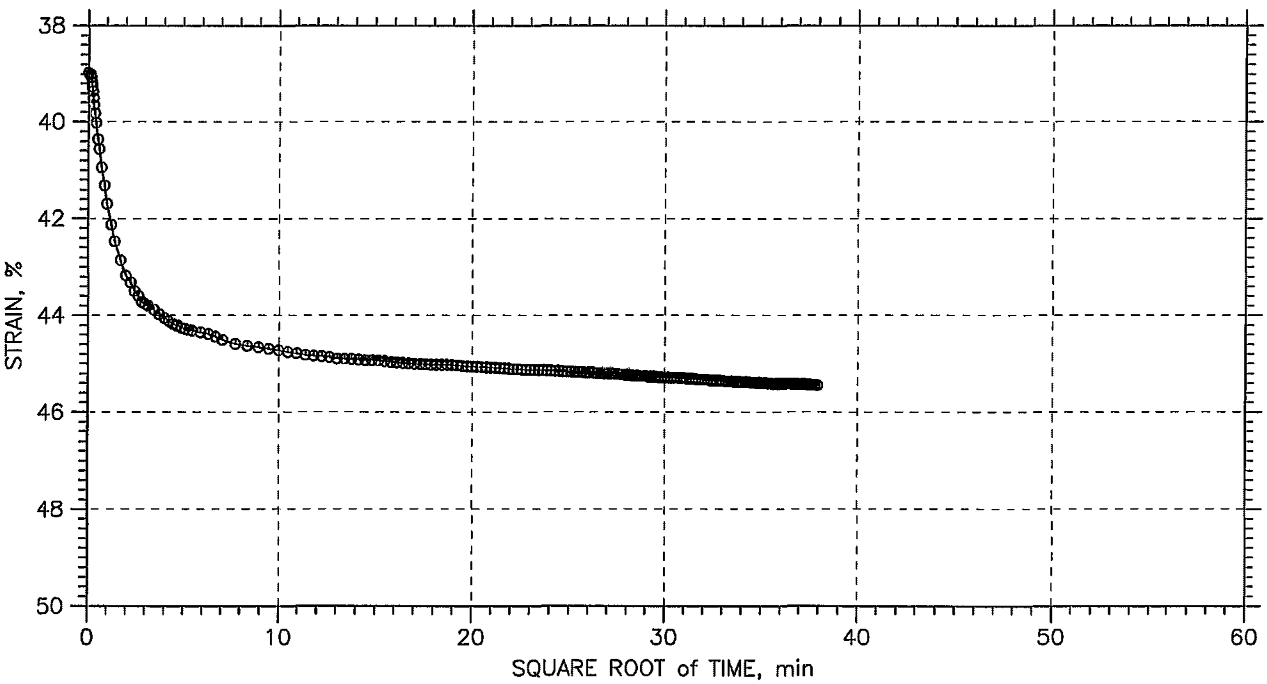
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

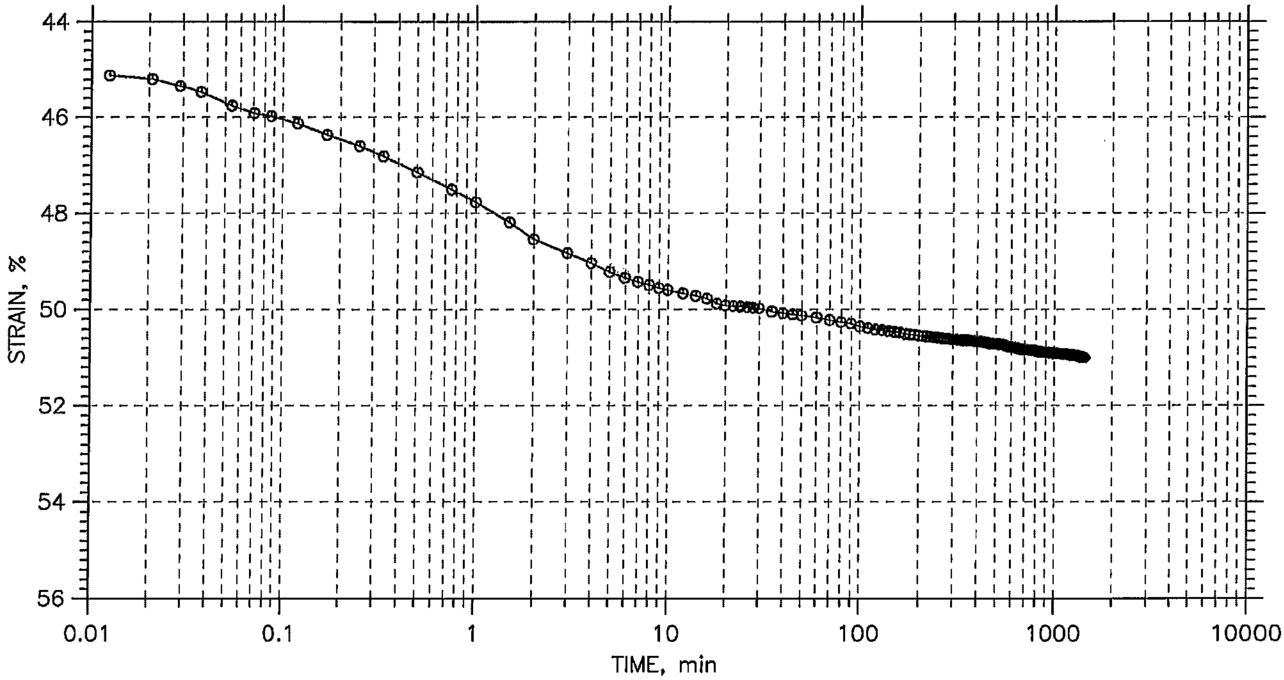
Mon, 06-AUG-2007 09:11:47

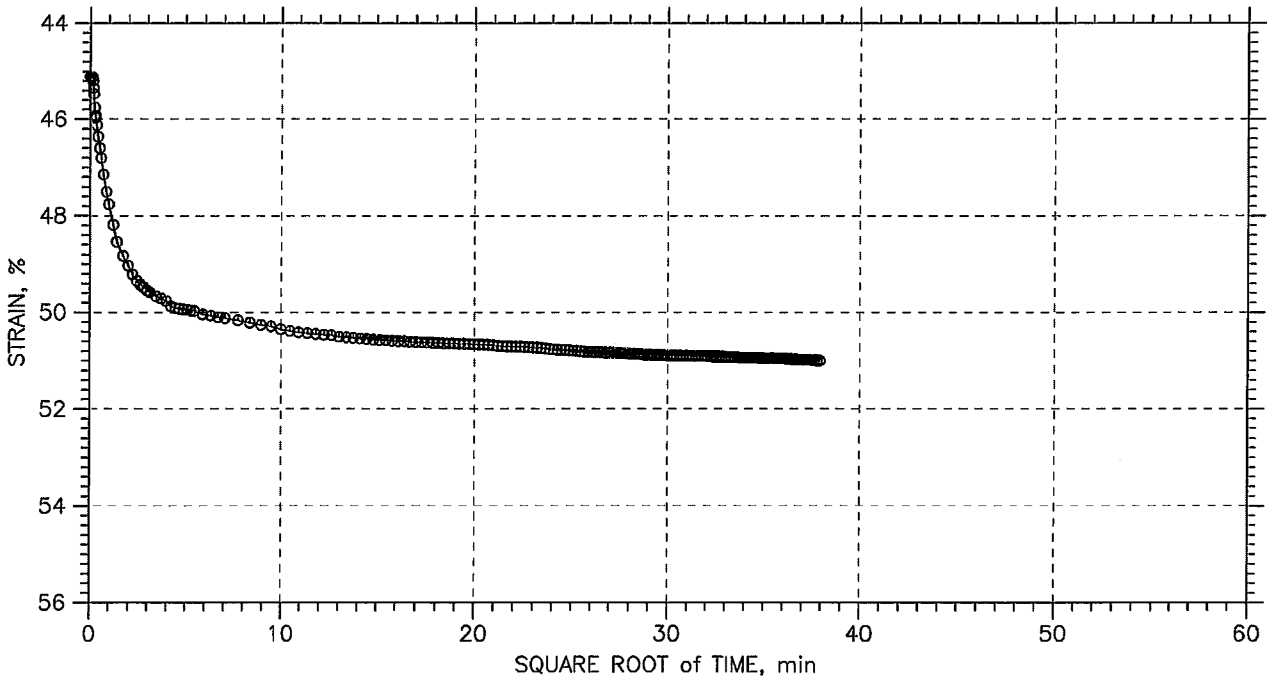
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation			
	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

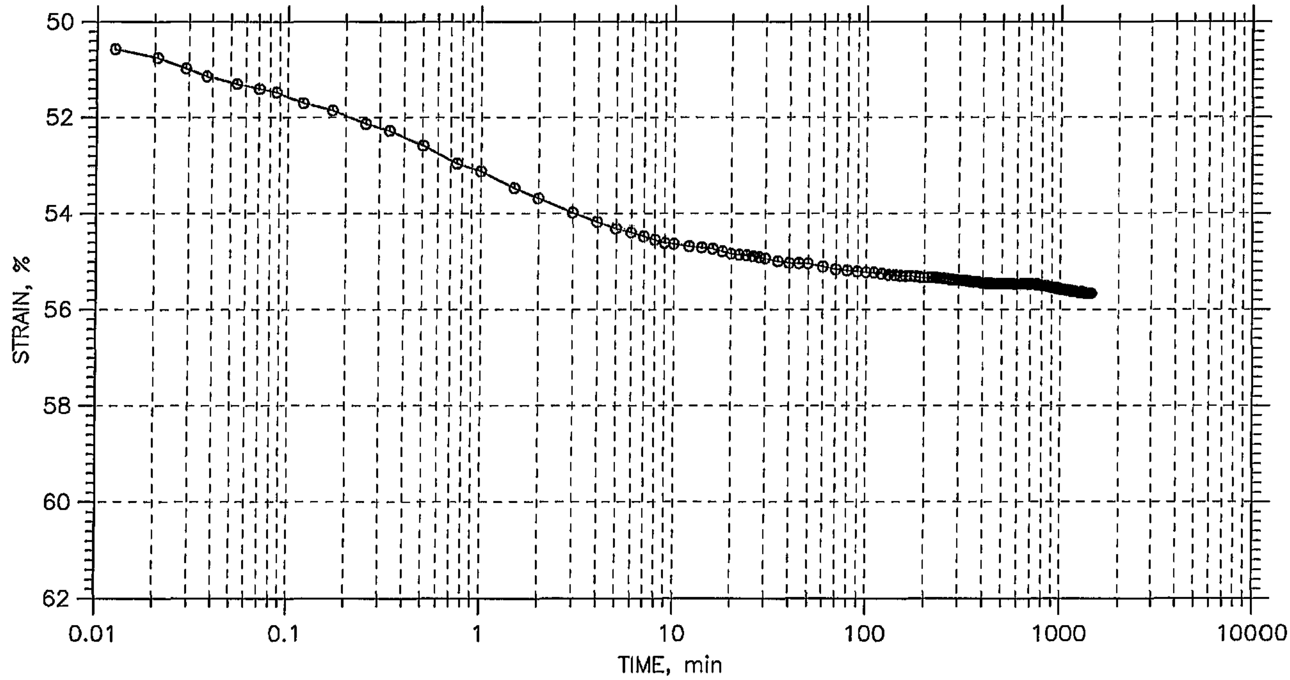
Mon, 06-AUG-2007 09:12:02

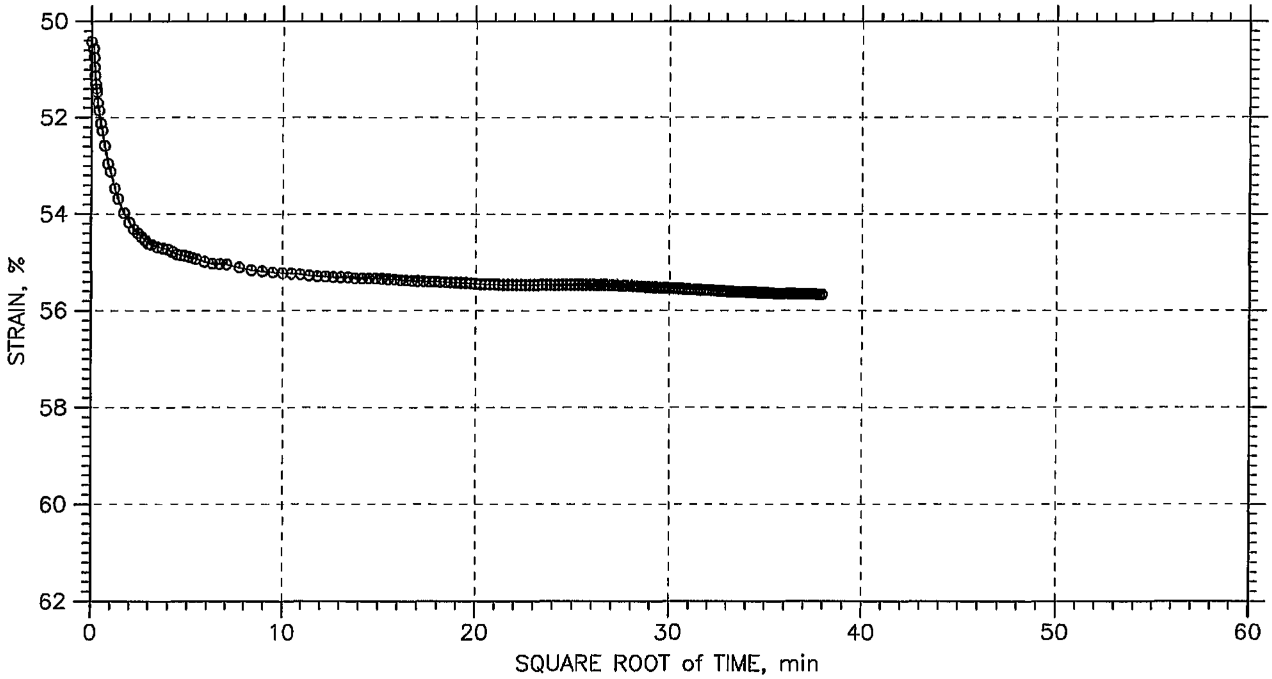
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

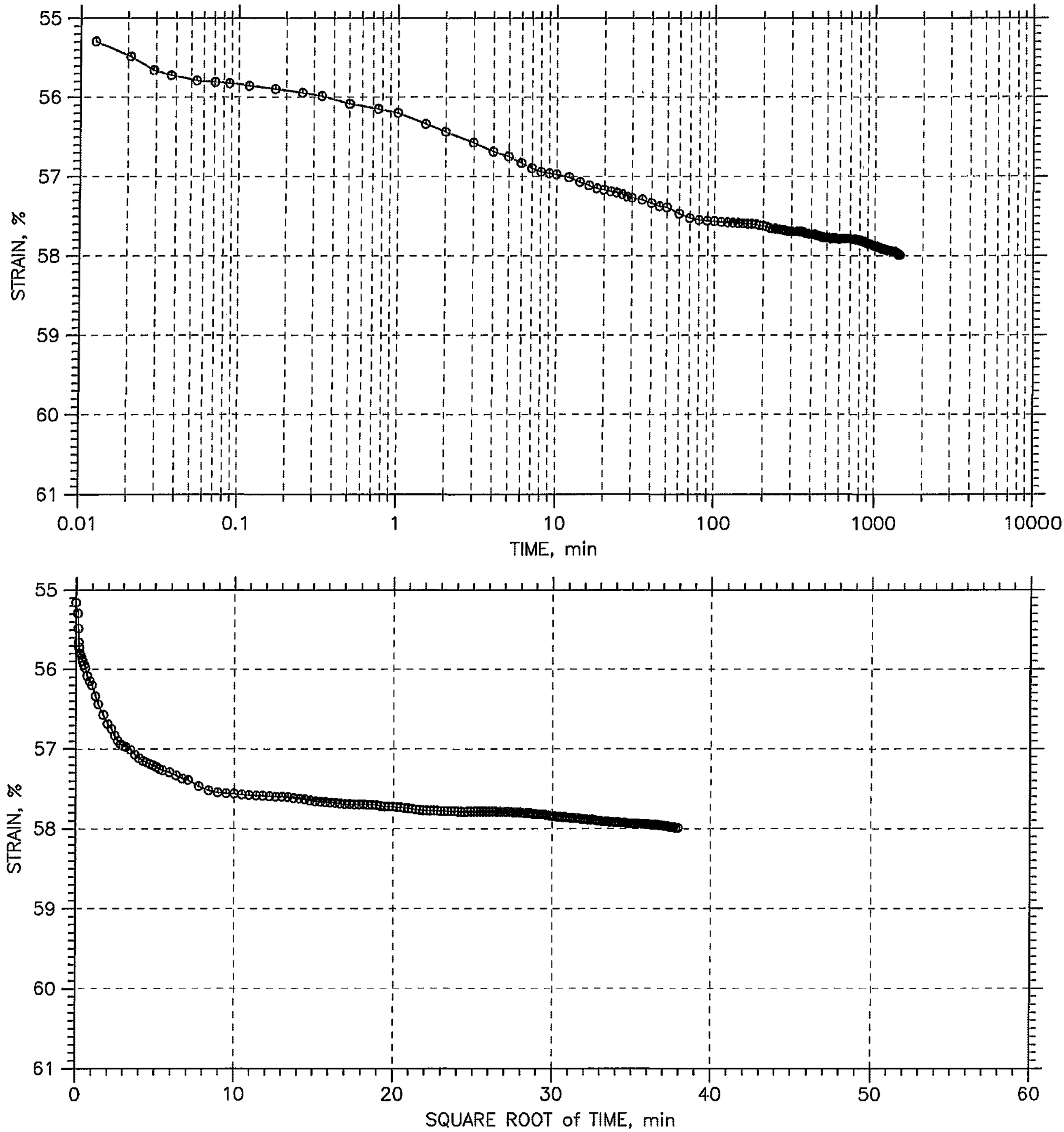
Mon, 06-AUG-2007 09:12:23

CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf



GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

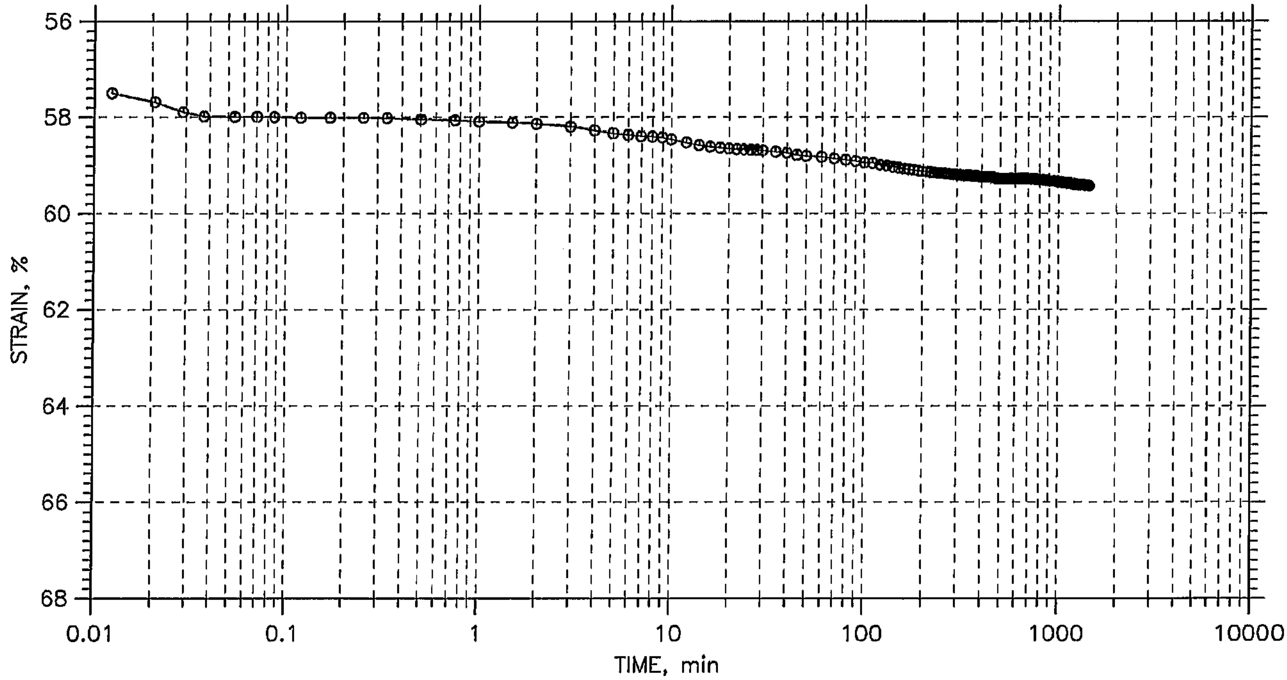
Mon, 06-AUG-2007 09:12:40

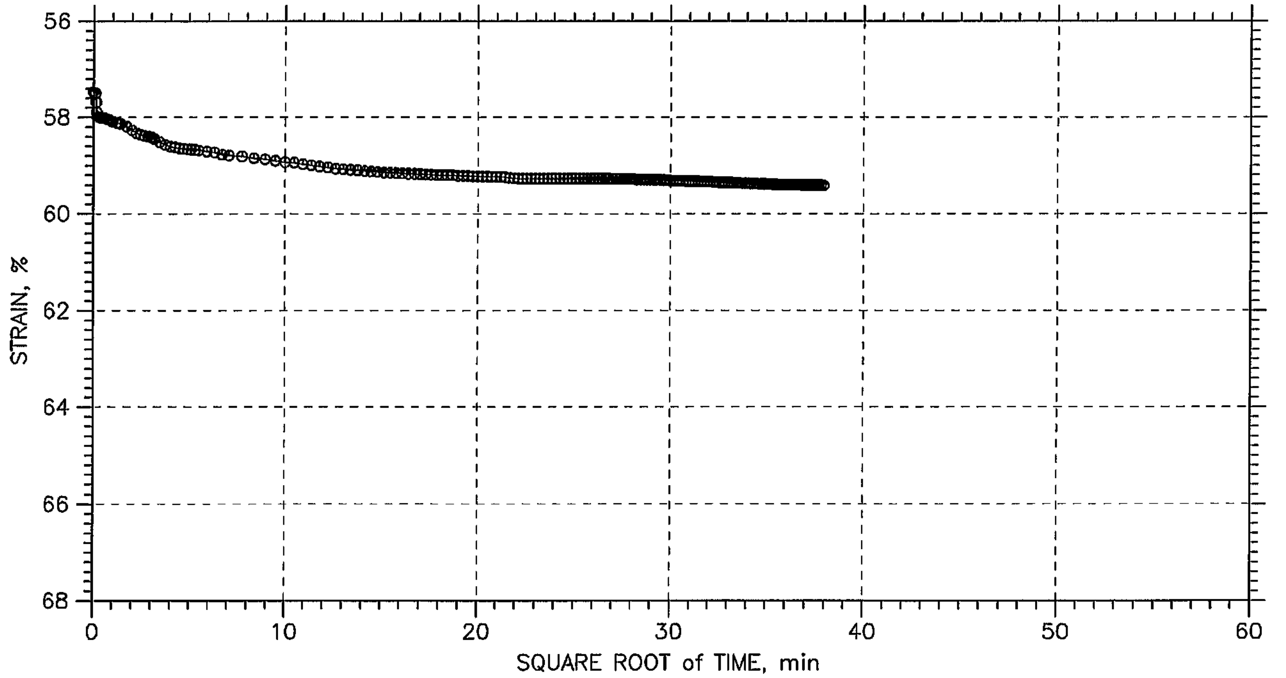
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

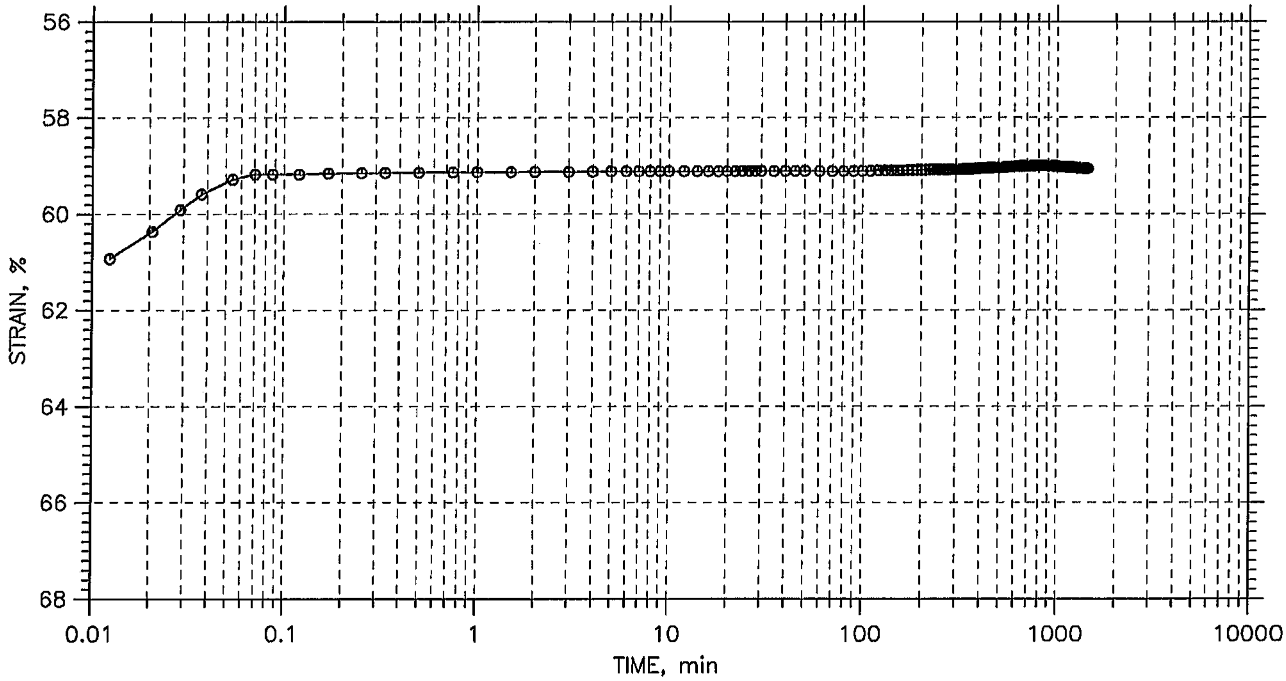
Mon, 06-AUG-2007 09:16:41

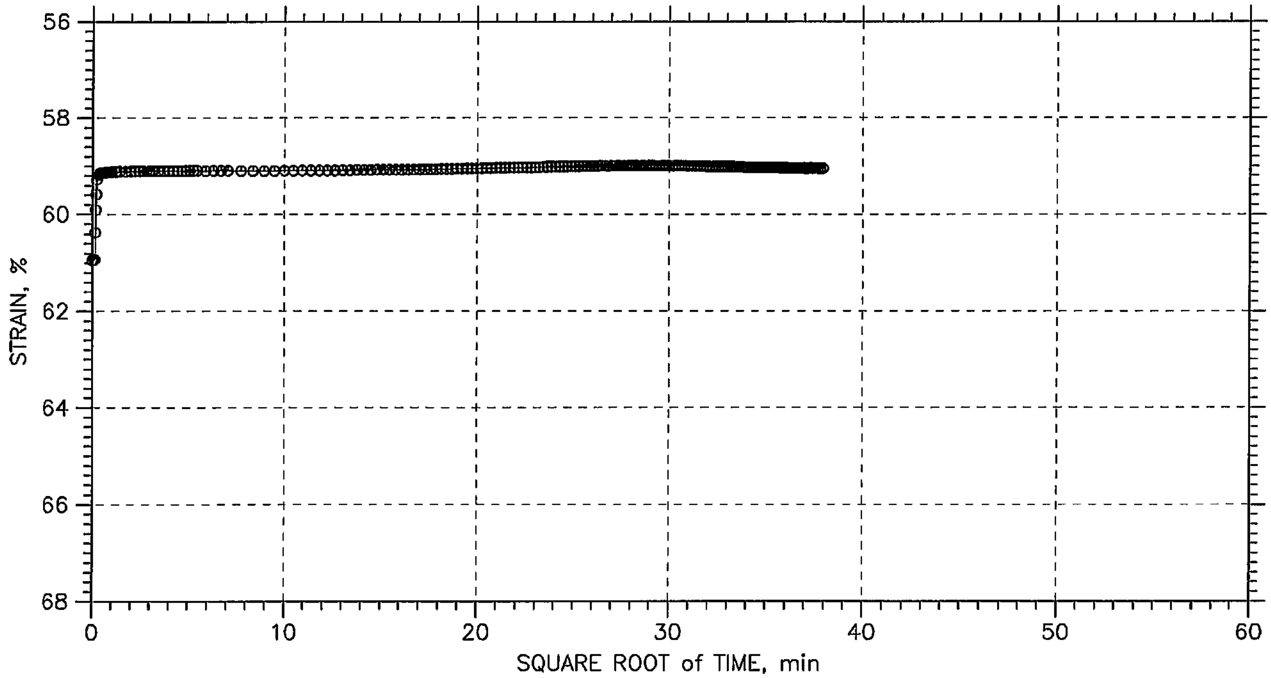
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

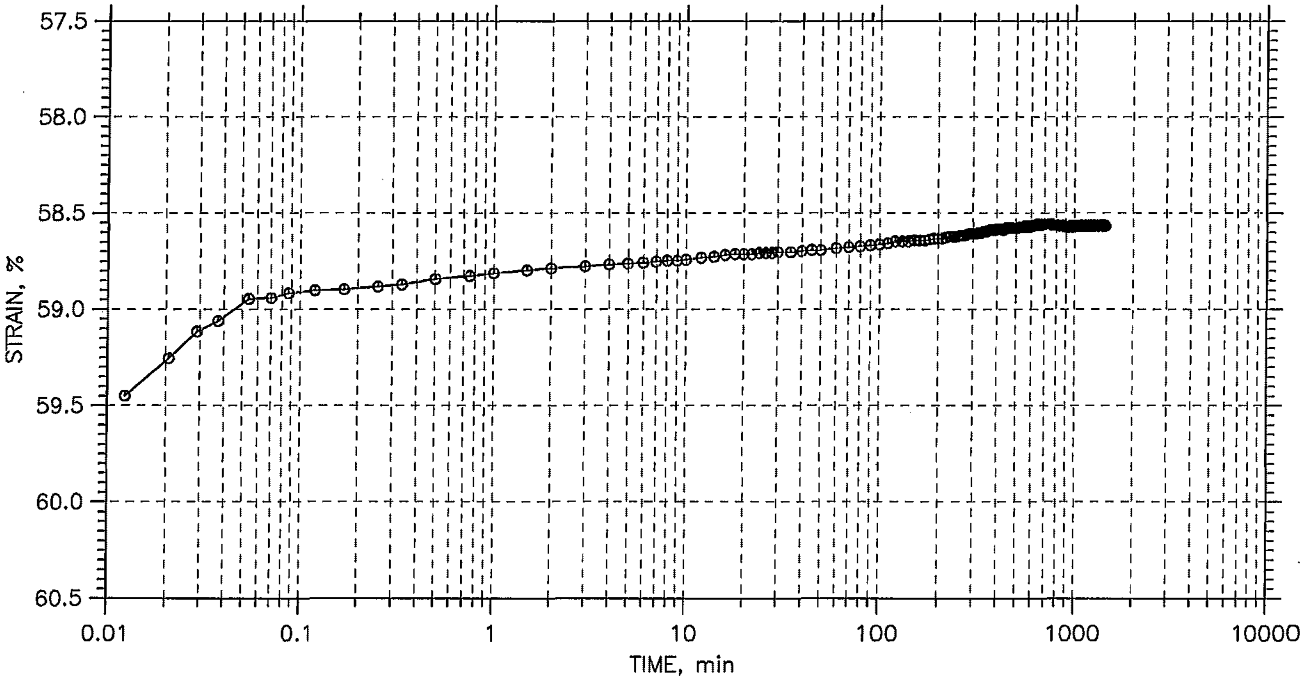
Mon, 06-AUG-2007 09:17:01

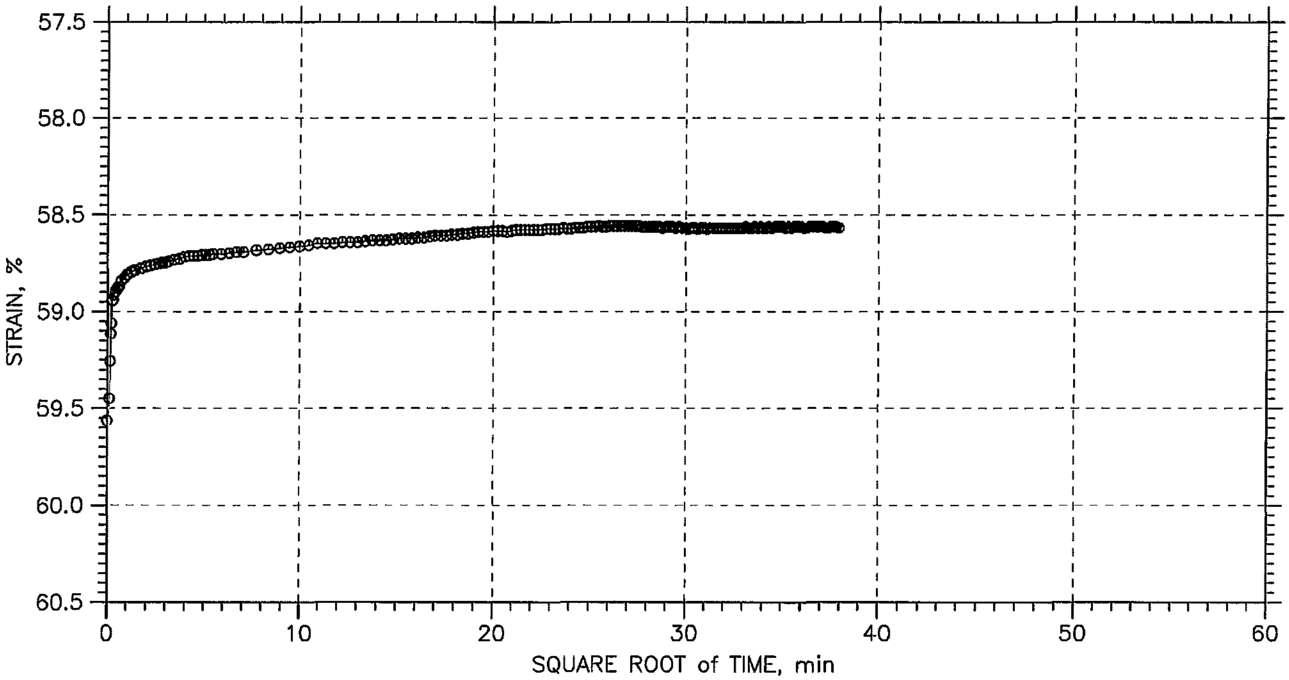
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

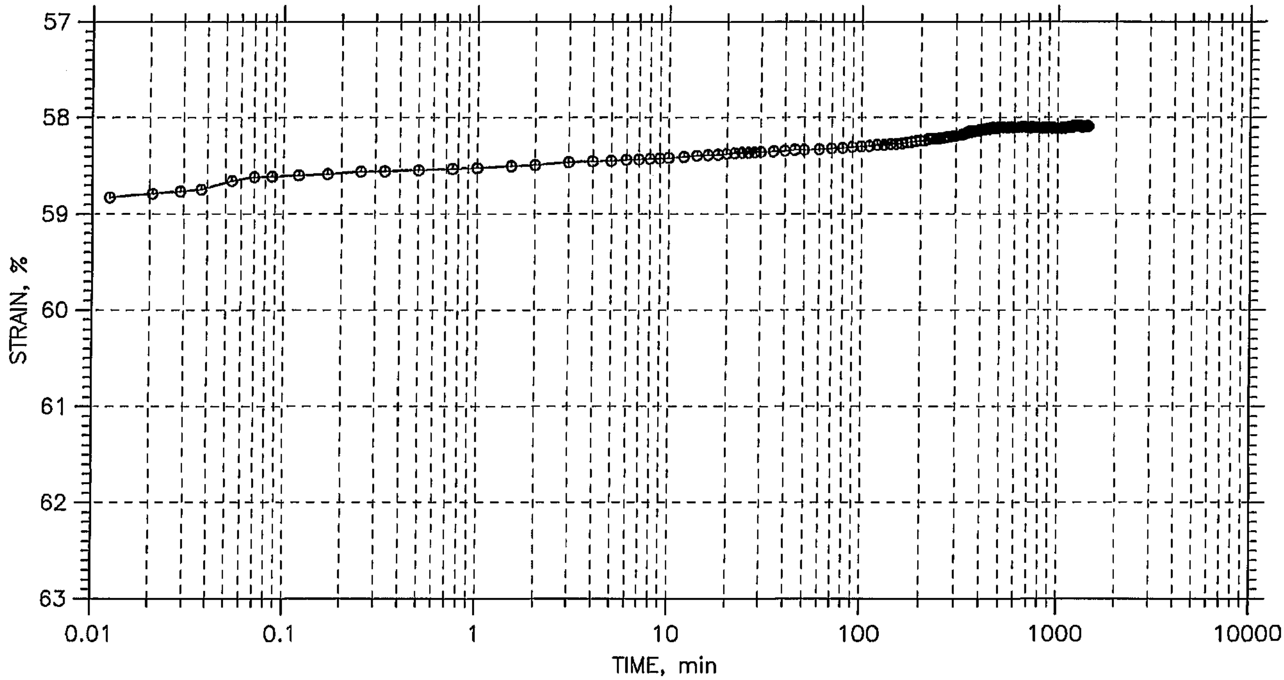
Mon, 06-AUG-2007 09:18:04

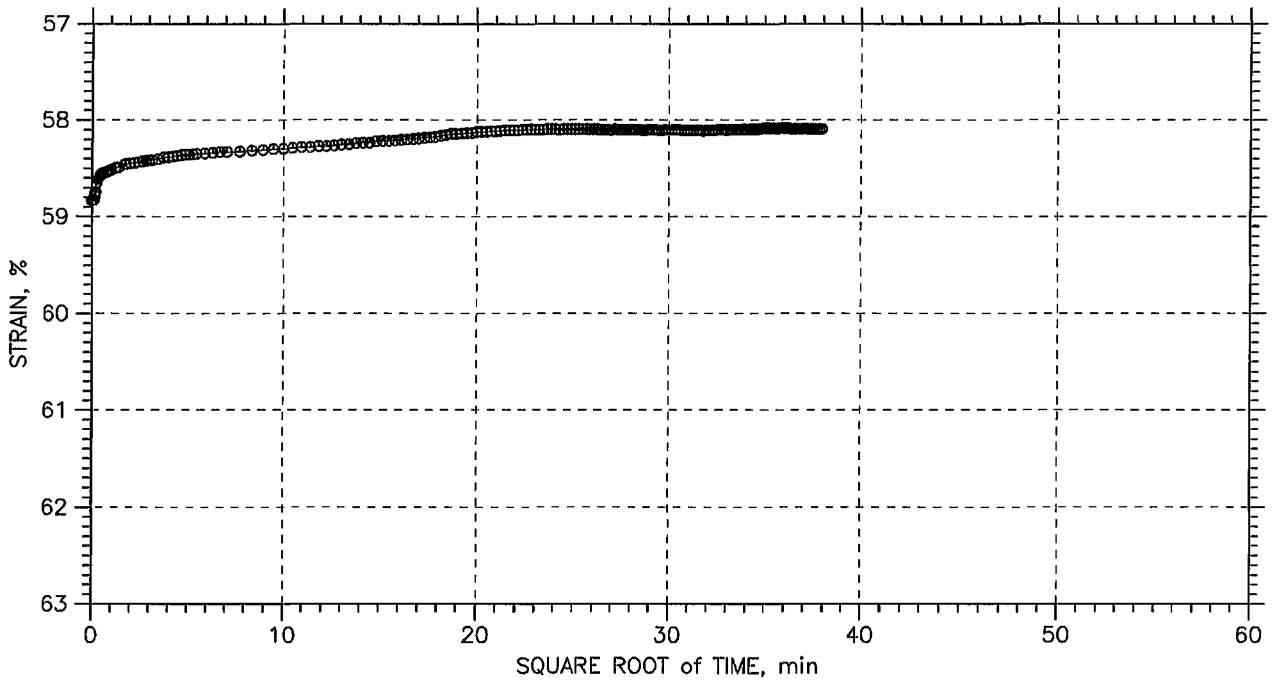
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf

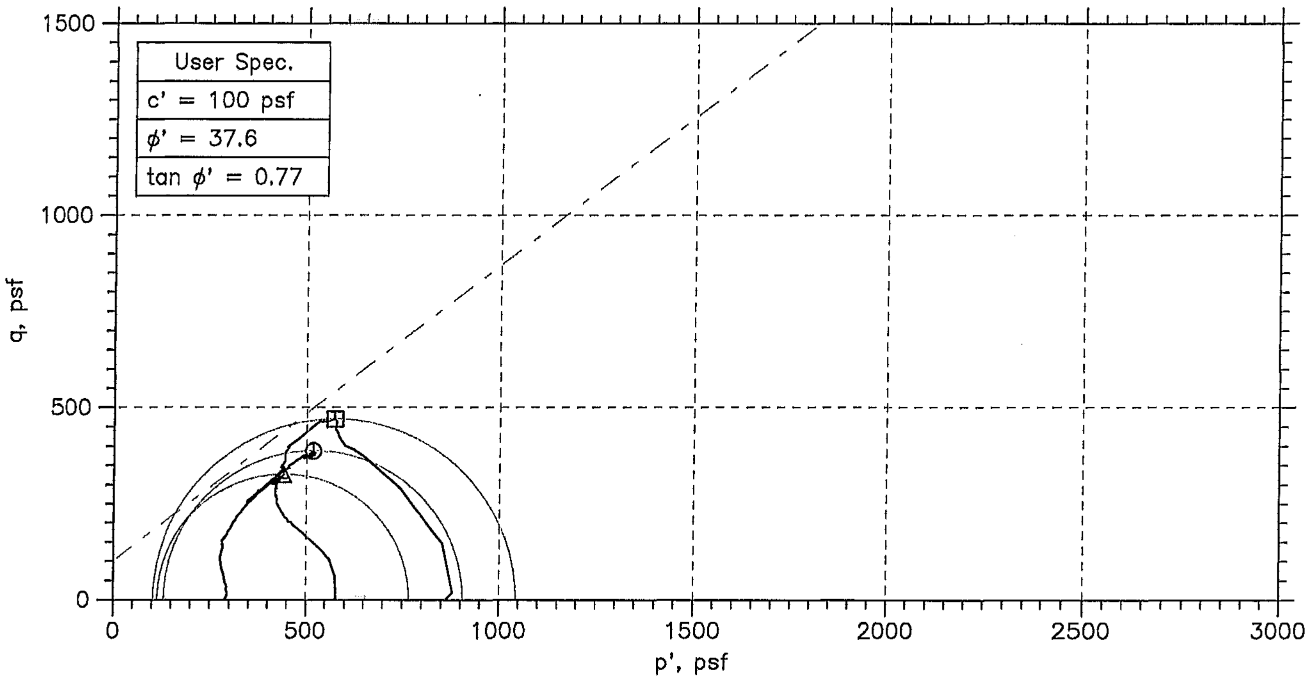


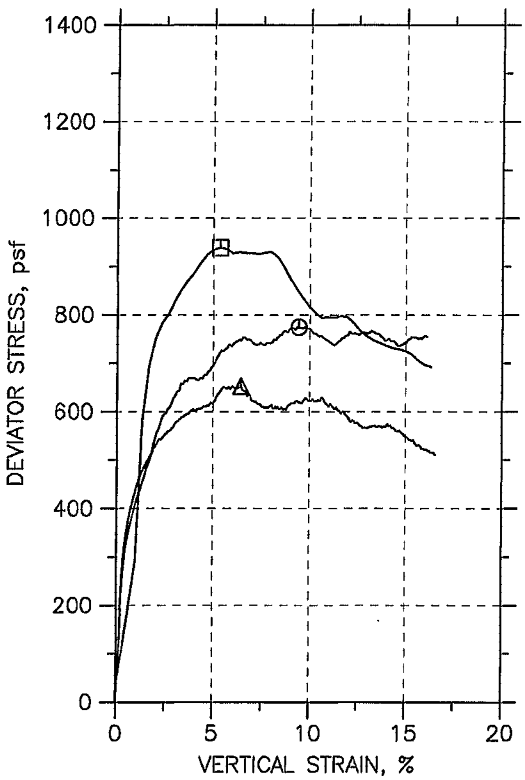


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20036	Tested By: md	Checked By: jdt
	Sample No.: 0317-19	Test Date: 07/09/07	Depth: 6-8 ft
	Test No.: C-35	Sample Type: tube	Elevation: ---
	Description: Wet, black silt		
	Remarks: System R		

Mon, 06-AUG-2007 09:18:19

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

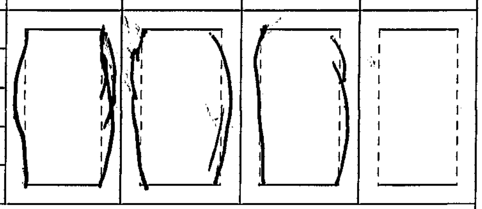




Symbol		⊙	△	⊡	
Sample No.		0317-20	0317-20	0317-20	
Test No.		CU-20-1	CU-20-2	CU-20-3	
Depth		4-6 ft.	4-6 ft	4-6 ft	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	6.02	6	6.15	
	Water Content, %	216.0	211.0	215.2	
	Dry Density, pcf	24.39	24.2	23.64	
	Saturation, %	98.7	95.5	94.8	
	Void Ratio	5.91	5.96	6.13	
Before Shear	Water Content, %	188.4	213.0	198.7	
	Dry Density, pcf	27.69	24.97	26.48	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	5.09	5.75	5.36	
	Back Press., psf	20140	7920	7920	
Ver. Eff. Cons. Stress, psf		288.3	575.9	863.3	
Shear Strength, psf		387.4	326.5	469.7	
Strain at Failure, %		9.45	6.44	5.34	
Strain Rate, %/min		0.032	0.032	0.032	
B-Value		0.90	0.96	0.96	
Estimated Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

GeoTesting express
a subsidiary of Geocomp Corporation

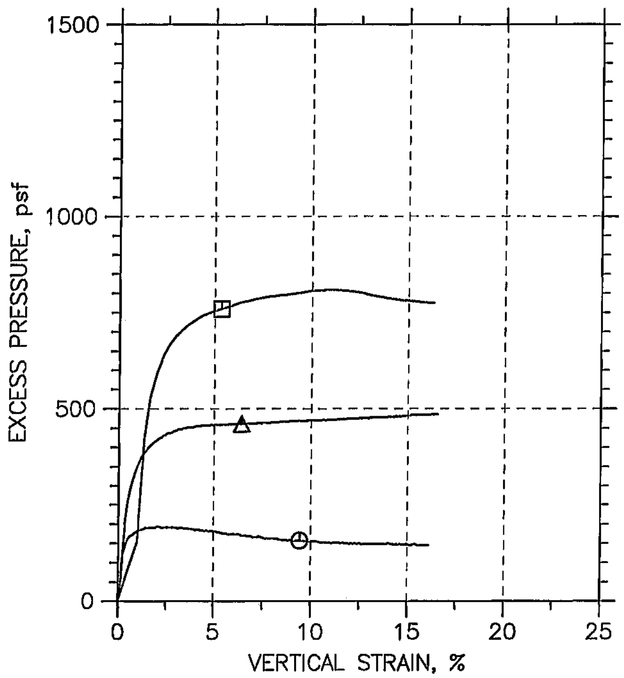
Project: Onondaga
Location: Syracuse NY
Project No.: GTX-7143
Boring No.: 20038
Sample Type: tube
Description: Moist, light gray silt
Remarks: System E

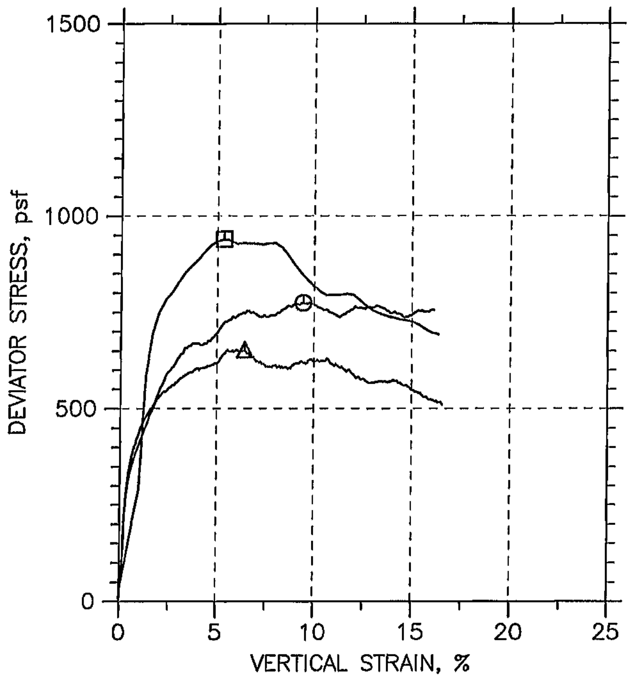


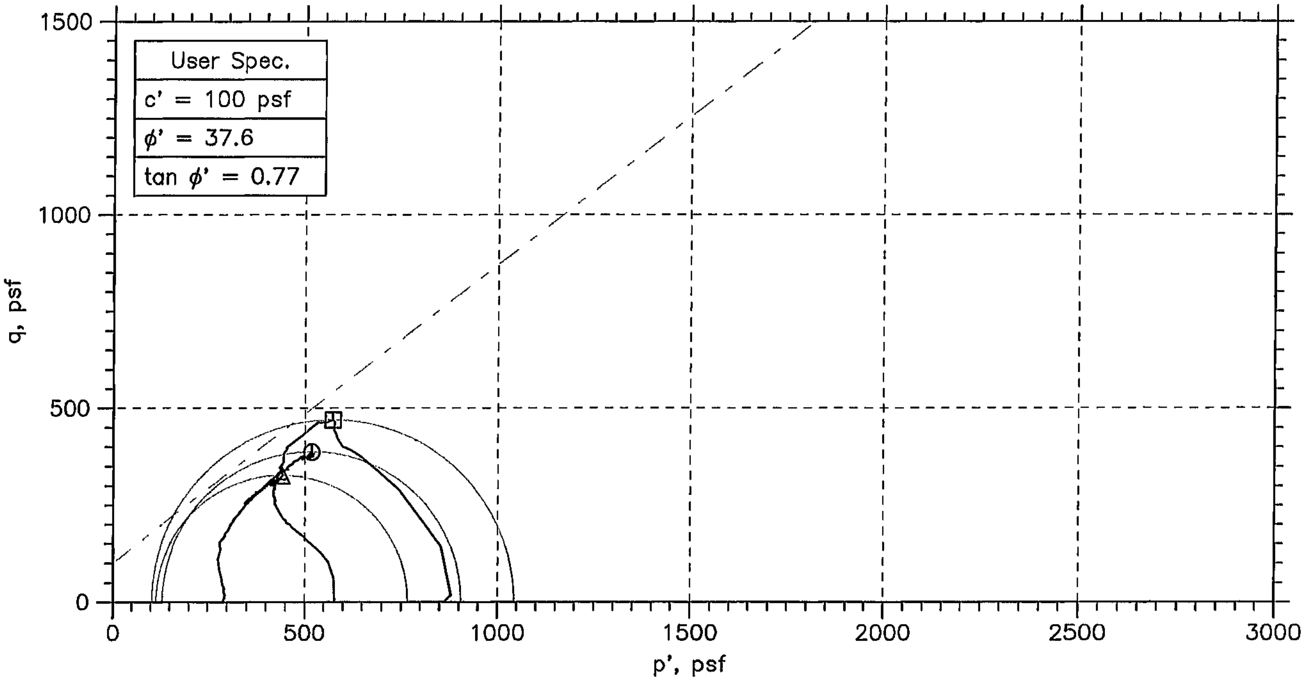
Tue, 17-JUL-2007 11:11:31

Phase calculations based on start and end of test.
* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







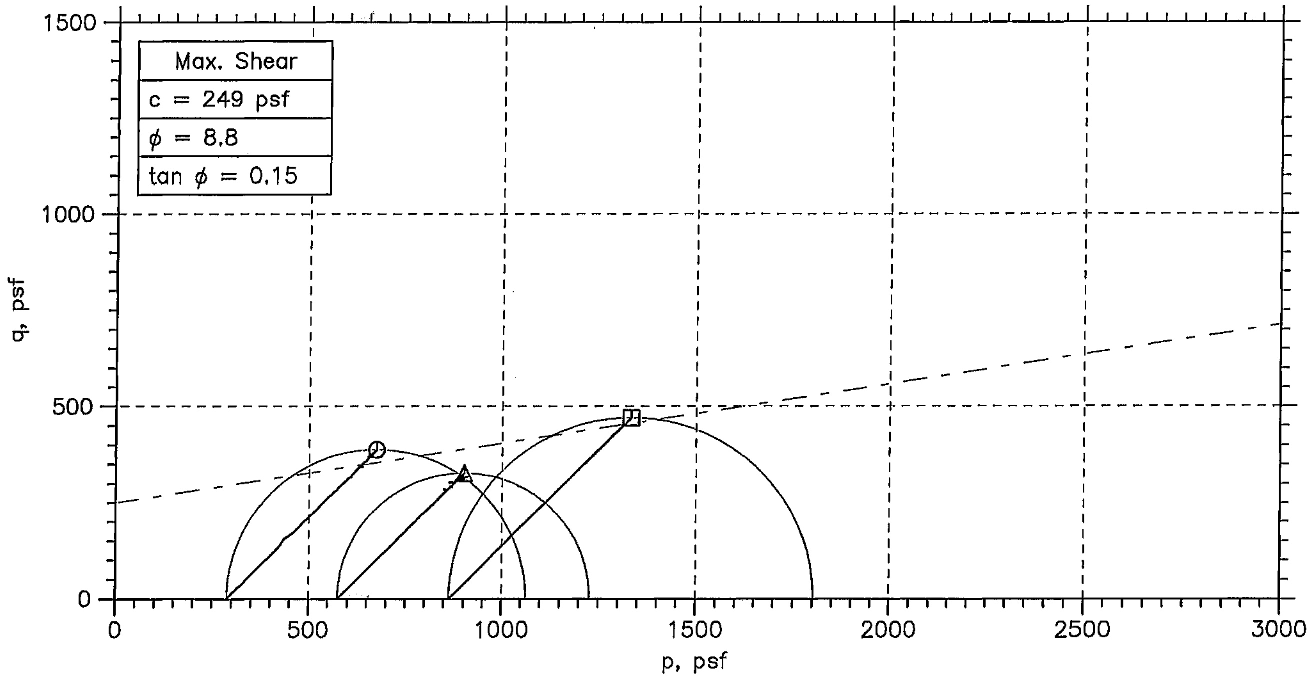
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⦶	0317-20	CU-20-1	4-6 ft.	njh	07/10/07	jdt		7143-CU-20-1n.dat
△	0317-20	CU-20-2	4-6 ft	njh	07/02/07	jdt		7143-CU-20-2n.dat
⊡	0317-20	CU-20-3	4-6 ft	njh	07/02/07	jdt		7143-CU-20-3n.dat

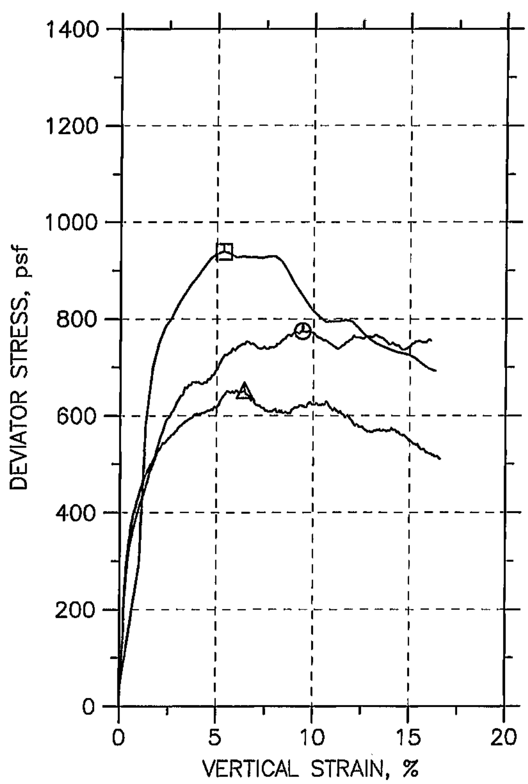
GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	Location: Syracuse NY	Project No.: GTX-7143
Boring No.: 20038	Sample Type: tube	
Description: Moist, light gray silt		
Remarks: System E		

Tue, 17-JUL-2007 11:11:38

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

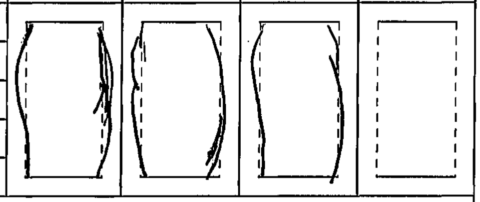




	Symbol	○	△	□	
	Sample No.	0317-20	0317-20	0317-20	
	Test No.	CU-20-1	CU-20-2	CU-20-3	
	Depth	4-6 ft.	4-6 ft	4-6 ft	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	6.02	6	6.15	
	Water Content, %	216.0	211.0	215.2	
	Dry Density, pcf	24.39	24.2	23.64	
	Saturation, %	98.7	95.5	94.8	
	Void Ratio	5.91	5.96	6.13	
Before Shear	Water Content, %	188.4	213.0	198.7	
	Dry Density, pcf	27.69	24.97	26.48	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	5.09	5.75	5.36	
	Back Press., psf	20140	7920	7920	
	Ver. Eff. Cons. Stress, psf	288.3	575.9	863.3	
	Shear Strength, psf	387.4	326.5	469.7	
	Strain at Failure, %	9.45	6.44	5.34	
	Strain Rate, %/min	0.032	0.032	0.032	
	B-Value	0.90	0.96	0.96	
	Estimated Specific Gravity	2.7	2.7	2.7	
	Liquid Limit	---	---	---	
	Plastic Limit	---	---	---	

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga
Location: Syracuse NY
Project No.: GTX-7143
Boring No.: 20038
Sample Type: tube



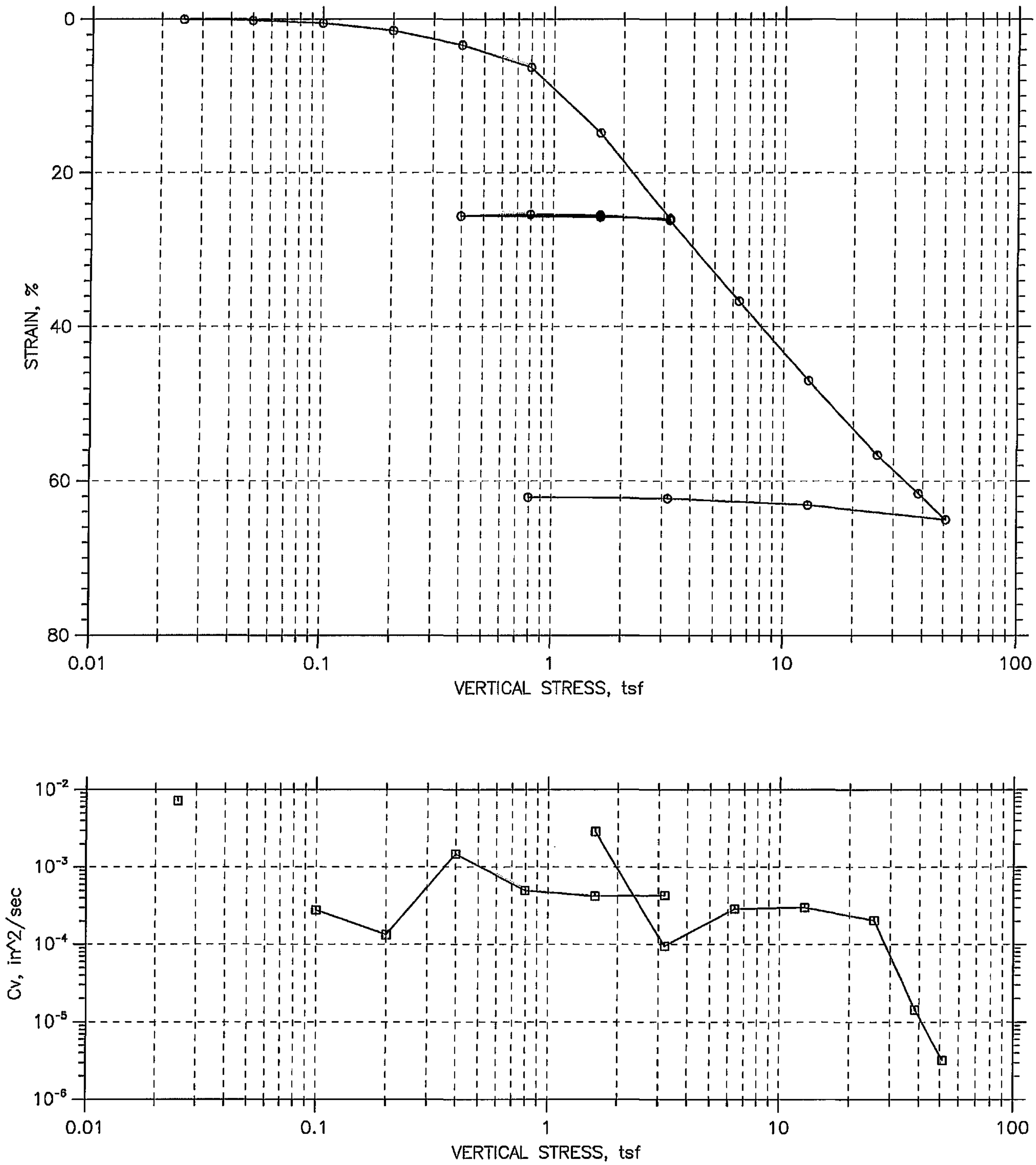
Description: Moist, light gray silt
Remarks: System E

Tue, 17-JUL-2007 11:12:04

Phase calculations based on start and end of test.
* Saturation is set to 100% for phase calculations.

CONSOLIDATION TEST DATA

SUMMARY REPORT

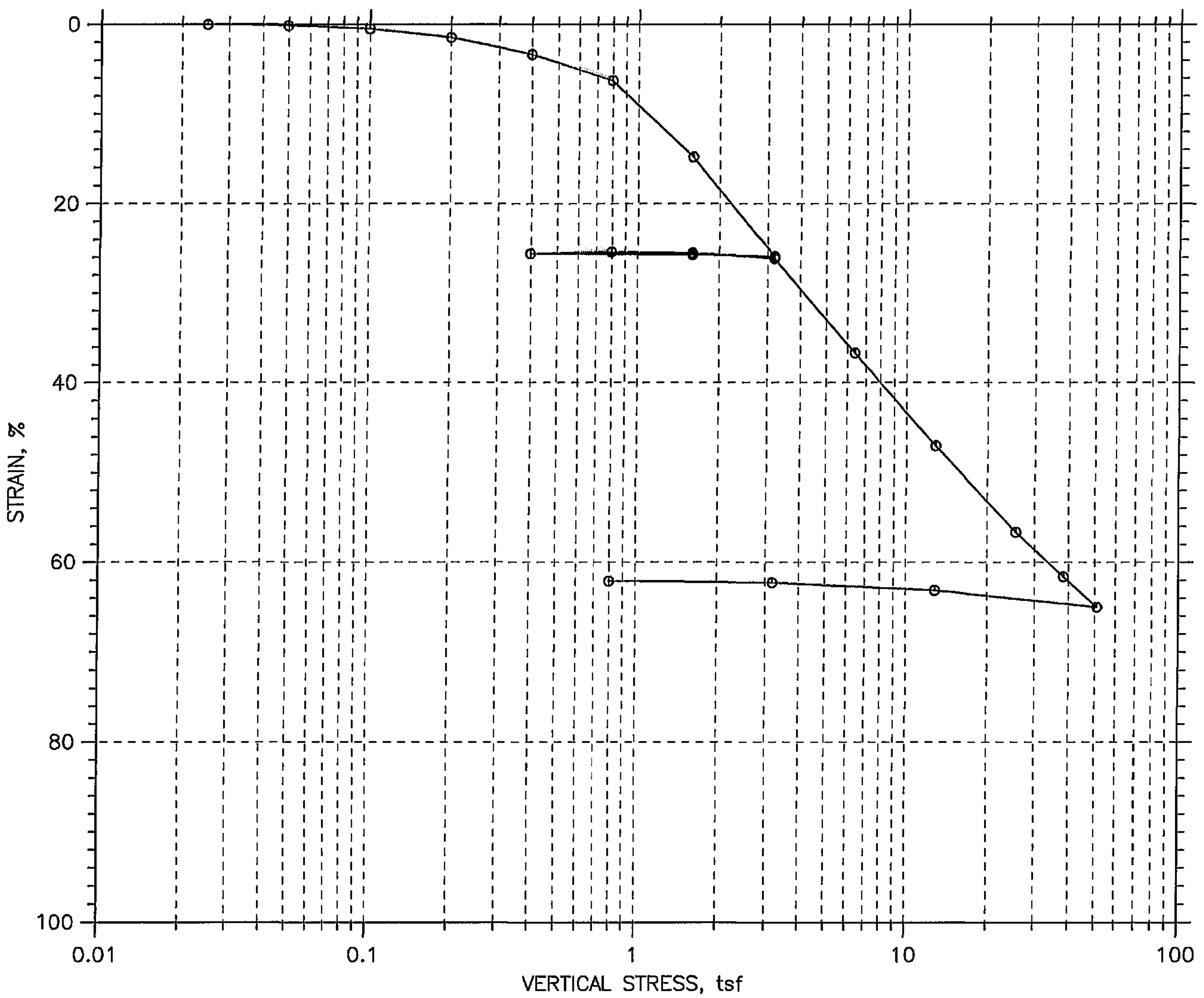


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

Mon, 06-AUG-2007 09:47:47

CONSOLIDATION TEST DATA

SUMMARY REPORT



					Before Test	After Test
Overburden Pressure: ---				Water Content, %	227.27	62.07
Preconsolidation Pressure: ---				Dry Unit Weight, pcf	23.46	61.91
Compression Index: ---				Saturation, %	99.99	99.99
Diameter: 2.5 in		Height: 1 in		Void Ratio	5.86	1.60
LL: 127	PL: 79	PI: 48	GS: 2.58			

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

Mon, 06-AUG-2007 09:47:49

CONSOLIDATION TEST DATA

Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
Boring No.: 20054	Tested By: md	Checked By: jdt
Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
Test No.: C-37	Sample Type: tube	Elevation: ---

Soil Description: Wet, gray silt with sand
Remarks: System T

Measured Specific Gravity: 2.58	Liquid Limit: 127	Initial Height: 1.00 in
Initial Void Ratio: 5.86	Plastic Limit: 79	Specimen Diameter: 2.50 in
Final Void Ratio: 1.60	Plasticity Index: 48	

	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
Container ID	NAACP	RING		Z-46
Wt. Container + Wet Soil, gm	208.6	314.49	264.54	53.73
Wt. Container + Dry Soil, gm	71.16	245.77	245.77	36.24
Wt. Container, gm	8.12	215.54	215.54	8.06
Wt. Dry Soil, gm	63.04	30.235	30.235	28.18
Water Content, %	218.02	227.27	62.07	62.07
Void Ratio	---	5.86	1.60	---
Degree of Saturation, %	---	99.99	99.99	---
Dry Unit Weight, pcf	---	23.465	61.913	---

CONSOLIDATION TEST DATA

Project: Onondaga
Boring No.: 20054
Sample No.: 0318-13
Test No.: C-37

Location: Syracuse, NY
Tested By: md
Test Date: 07/09/2007
Sample Type: tube

Project No.: GTX-7143
Checked By: jdt
Depth: 4-6 ft
Elevation: ---

Soil Description: Wet, gray silt with sand
Remarks: System T

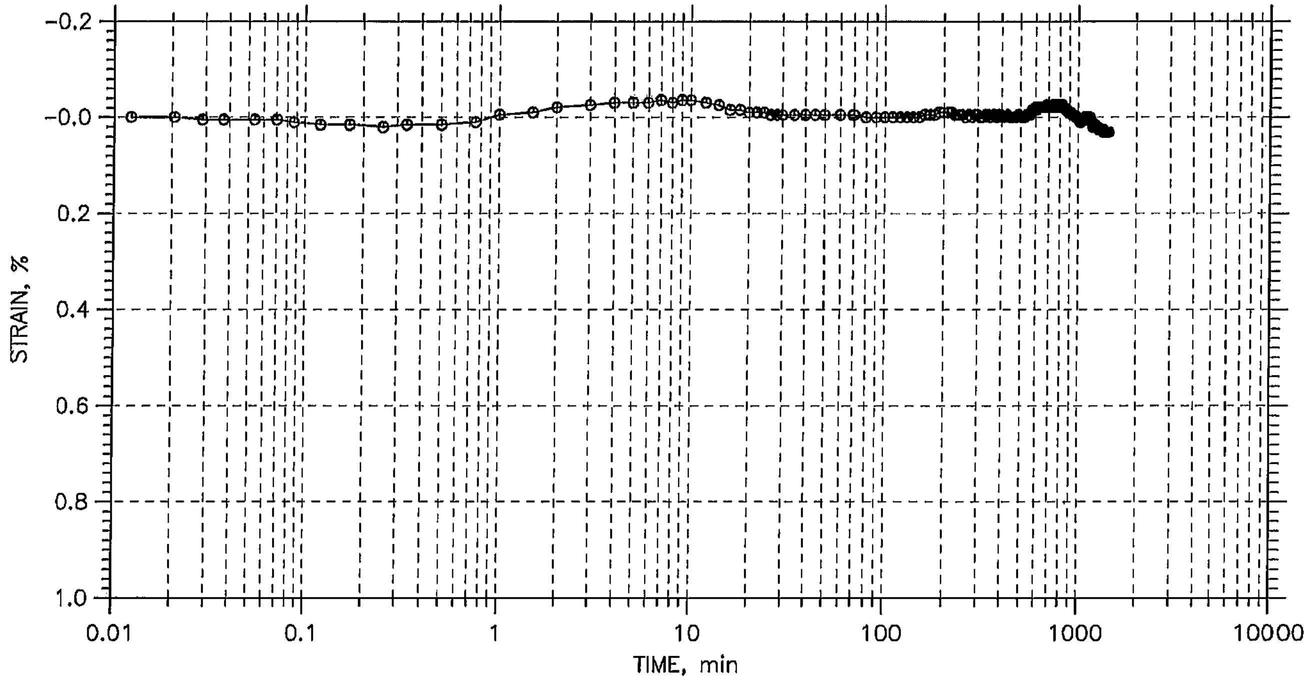
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting Sq.Rt. min	T50 Fitting Log min	Coefficient of Consolidation Sq.Rt. in^2/sec	Coefficient of Consolidation Log in^2/sec	Coefficient of Consolidation Ave. in^2/sec
1	0.025	0.0003024	5.862	0.03	0.0	0.1	0.00e+000	7.13e-003	7.13e-003
2	0.05	0.001272	5.855	0.13	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
3	0.1	0.004835	5.831	0.48	2.9	0.0	2.80e-004	0.00e+000	2.80e-004
4	0.2	0.01483	5.762	1.48	6.0	0.0	1.33e-004	0.00e+000	1.33e-004
5	0.4	0.0336	5.633	3.36	0.5	0.0	1.46e-003	0.00e+000	1.46e-003
6	0.8	0.06274	5.433	6.27	1.5	1.5	5.01e-004	4.97e-004	4.99e-004
7	1.6	0.1482	4.847	14.82	1.4	1.7	4.73e-004	3.82e-004	4.22e-004
8	3.2	0.2589	4.087	25.89	1.2	0.0	4.31e-004	0.00e+000	4.31e-004
9	1.6	0.2572	4.098	25.72	0.1	0.0	6.40e-003	0.00e+000	6.40e-003
10	0.4	0.2558	4.108	25.58	0.3	0.0	1.52e-003	0.00e+000	1.52e-003
11	0.8	0.2541	4.120	25.41	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
12	1.6	0.2551	4.113	25.51	0.2	0.0	2.89e-003	0.00e+000	2.89e-003
13	3.2	0.2613	4.071	26.13	4.8	0.0	9.51e-005	0.00e+000	9.51e-005
14	6.4	0.3665	3.348	36.65	1.3	1.4	3.07e-004	2.73e-004	2.89e-004
15	12.8	0.4698	2.639	46.98	1.0	0.9	2.93e-004	3.07e-004	3.00e-004
16	25.6	0.5662	1.978	56.62	1.0	0.8	1.84e-004	2.31e-004	2.05e-004
17	38.4	0.6161	1.635	61.61	9.6	0.0	1.43e-005	0.00e+000	1.43e-005
18	51.2	0.6501	1.402	65.01	34.3	0.0	3.23e-006	0.00e+000	3.23e-006
19	12.8	0.6312	1.531	63.12	0.1	0.0	1.48e-003	0.00e+000	1.48e-003
20	3.2	0.6227	1.590	62.27	0.1	0.0	1.04e-003	0.00e+000	1.04e-003
21	0.8	0.621	1.601	62.10	0.1	0.0	1.76e-003	0.00e+000	1.76e-003

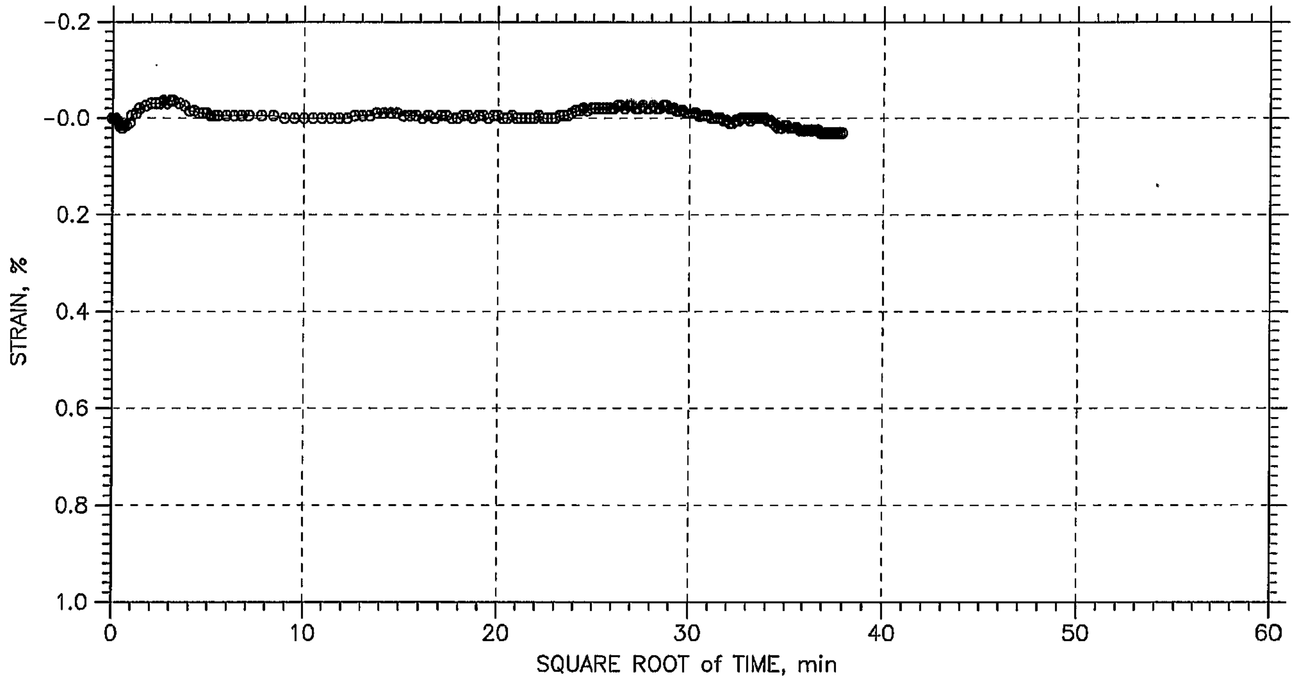
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 1 of 21

Stress: 2.5e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

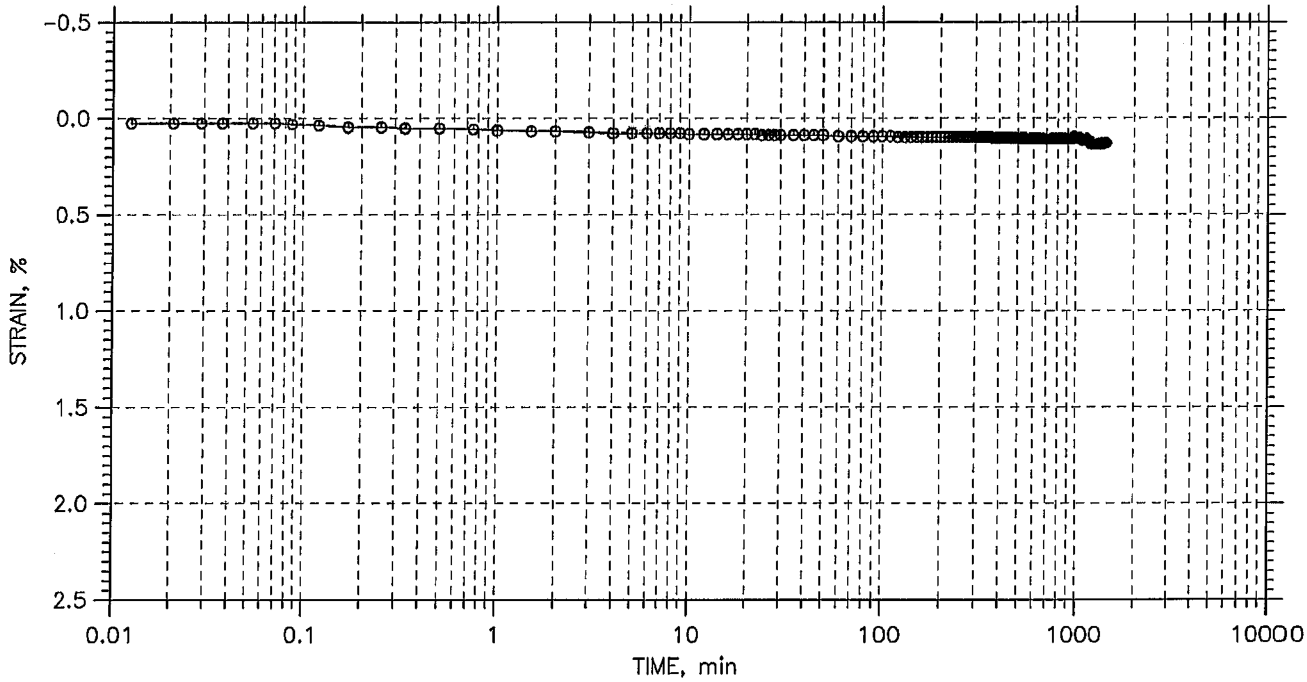
Mon, 06-AUG-2007 10:03:33

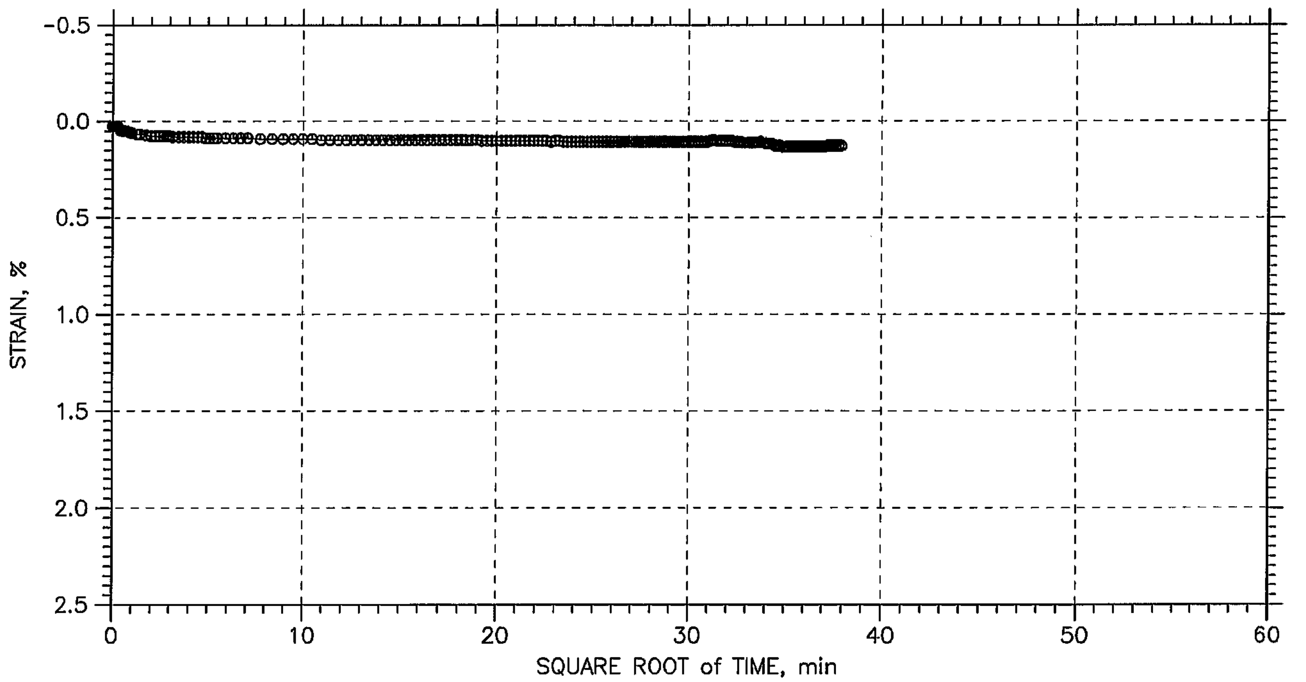
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 2 of 21

Stress: 5.e-002 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

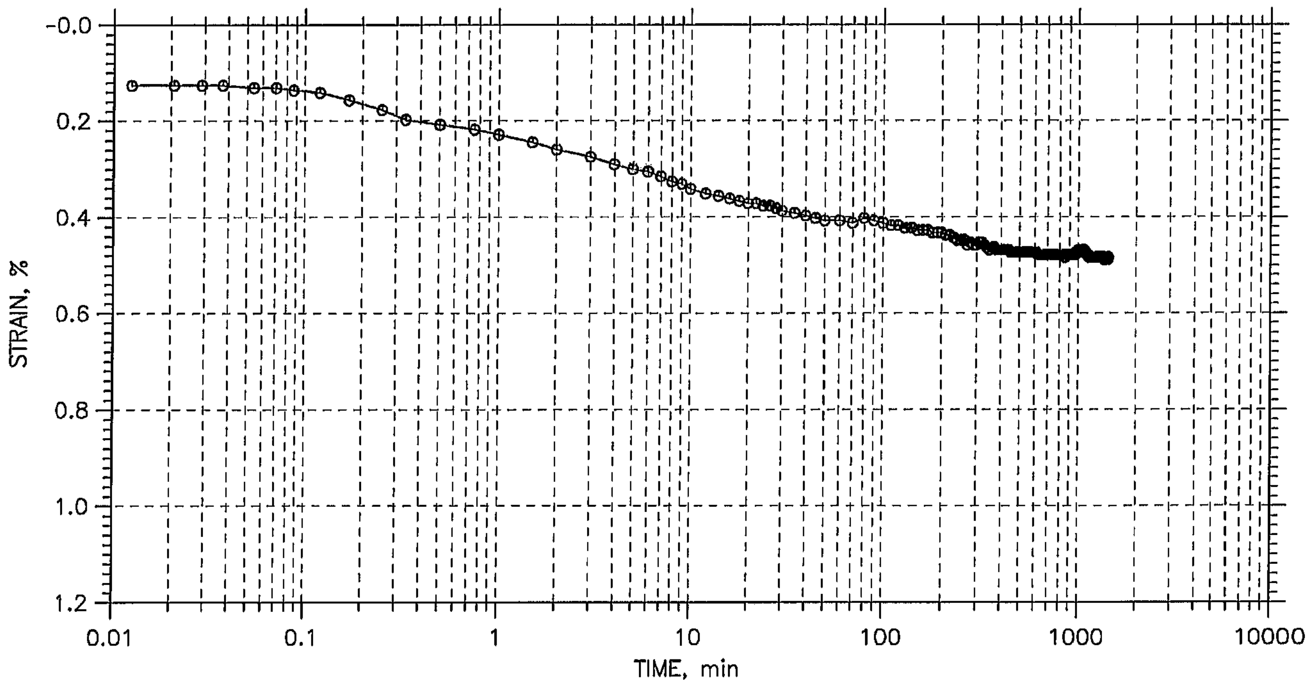
Mon, 06-AUG-2007 10:03:49

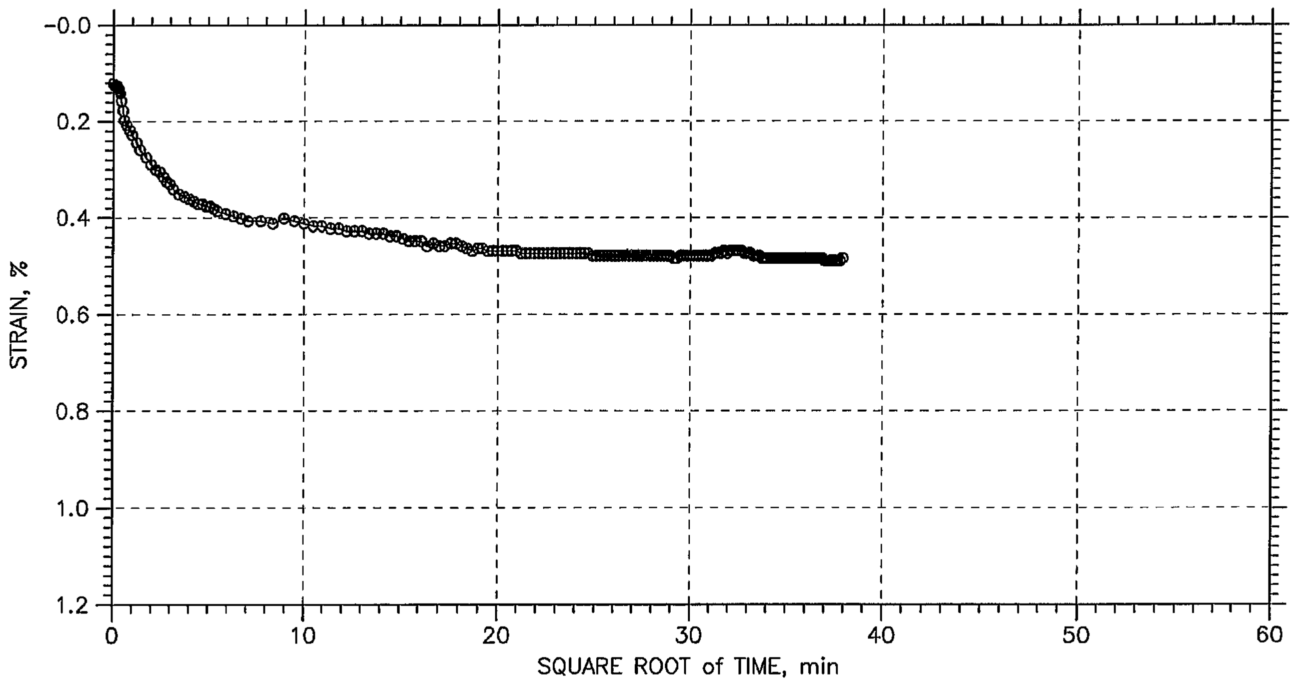
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 3 of 21

Stress: 0.1 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

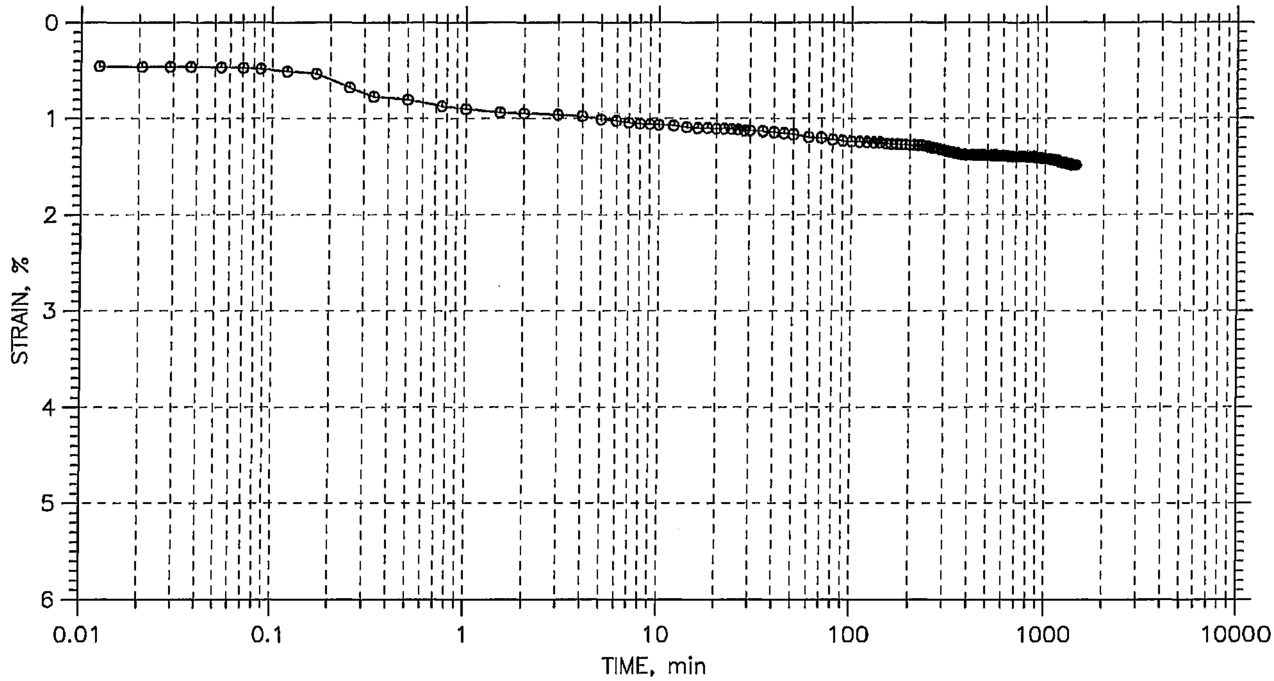
Mon, 06-AUG-2007 10:04:08

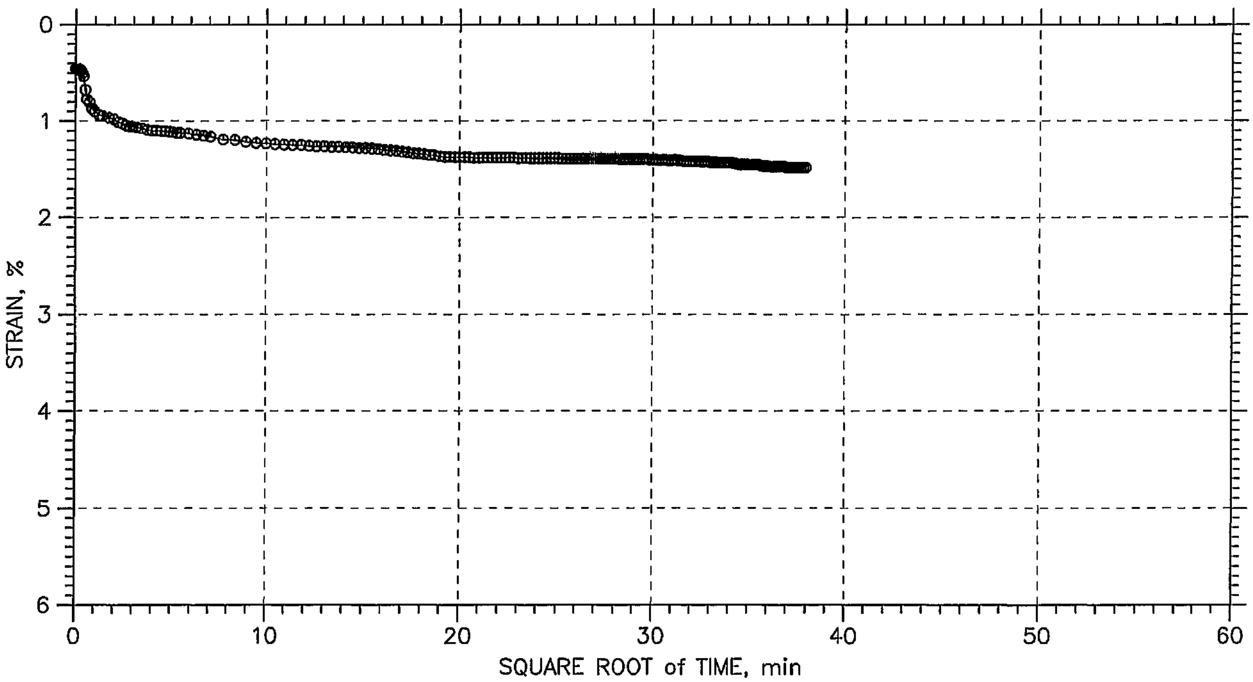
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 4 of 21

Stress: 0.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

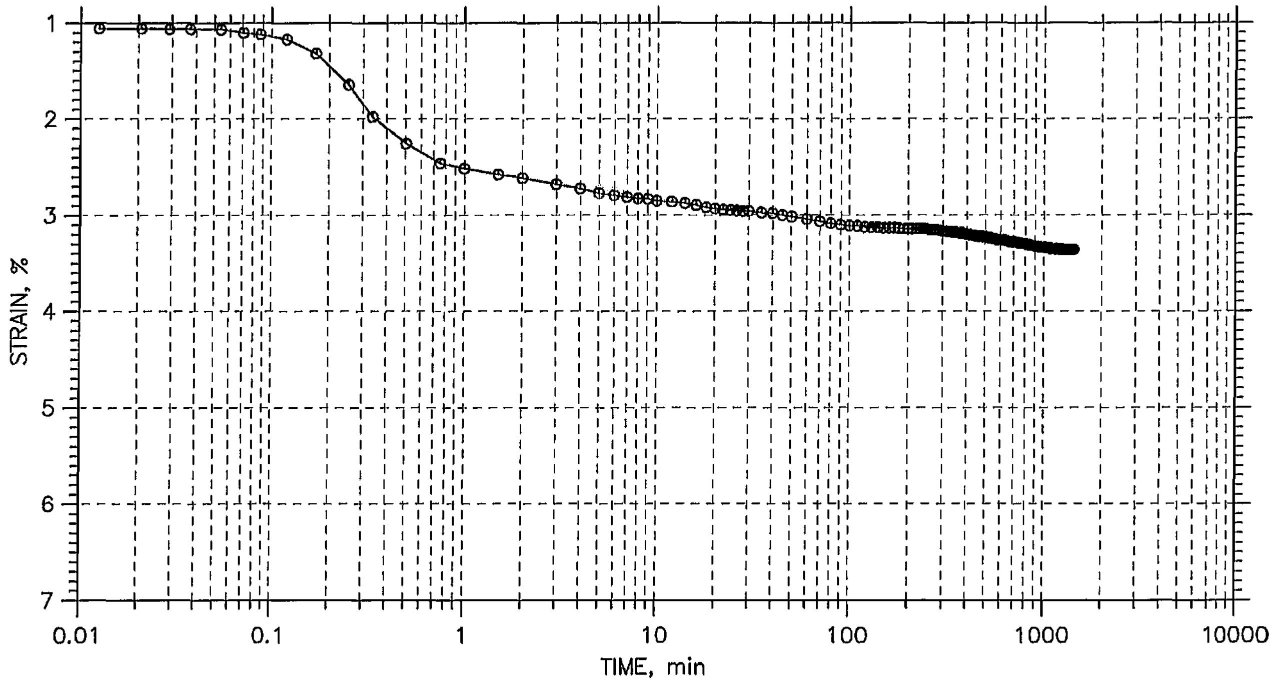
Mon, 06-AUG-2007 10:04:36

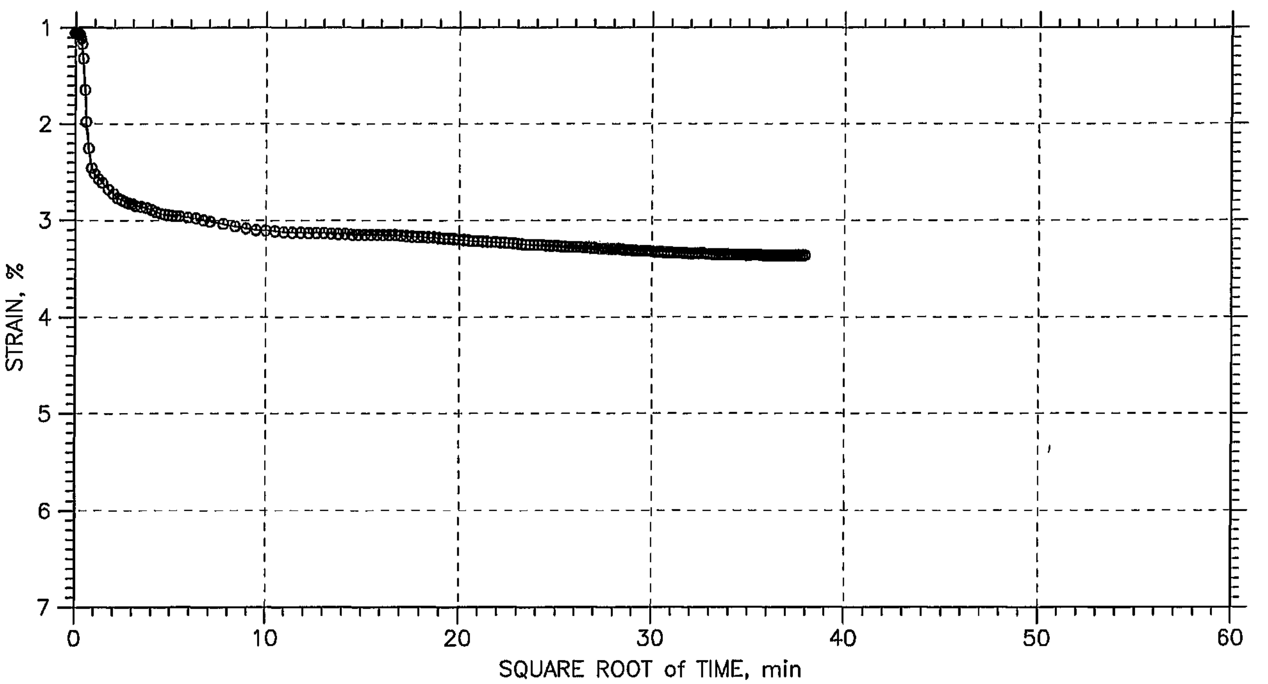
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 5 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

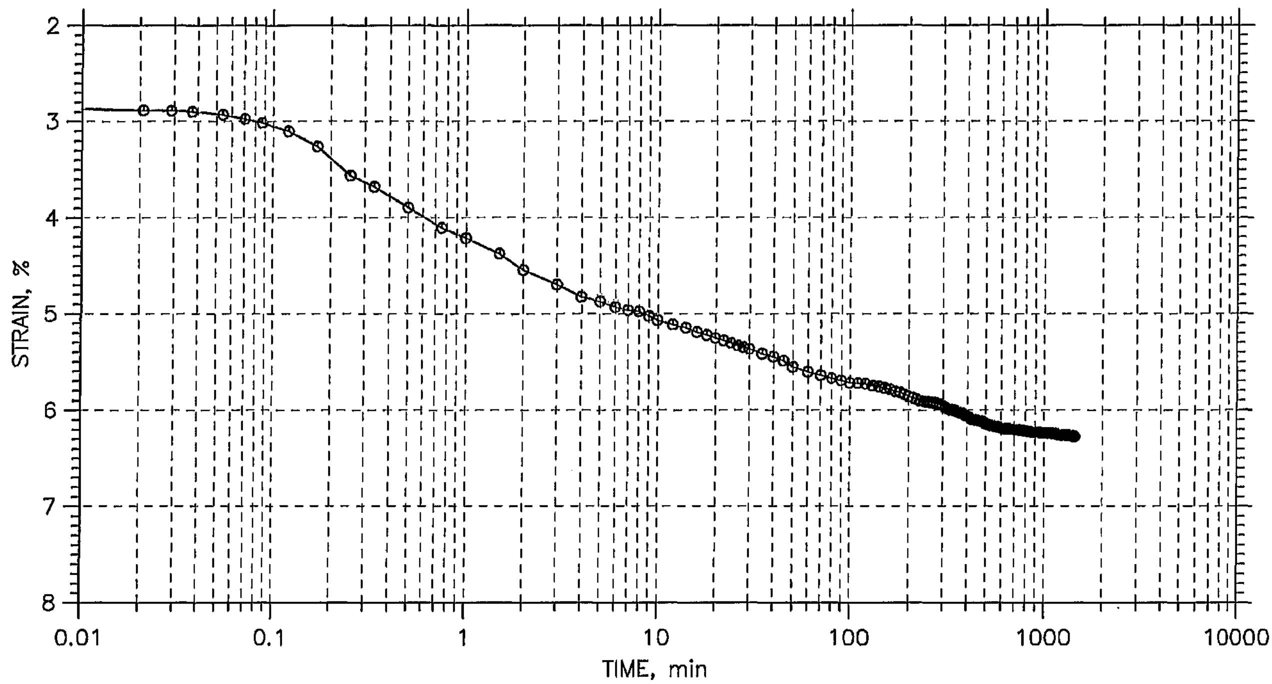
Mon, 06-AUG-2007 10:04:49

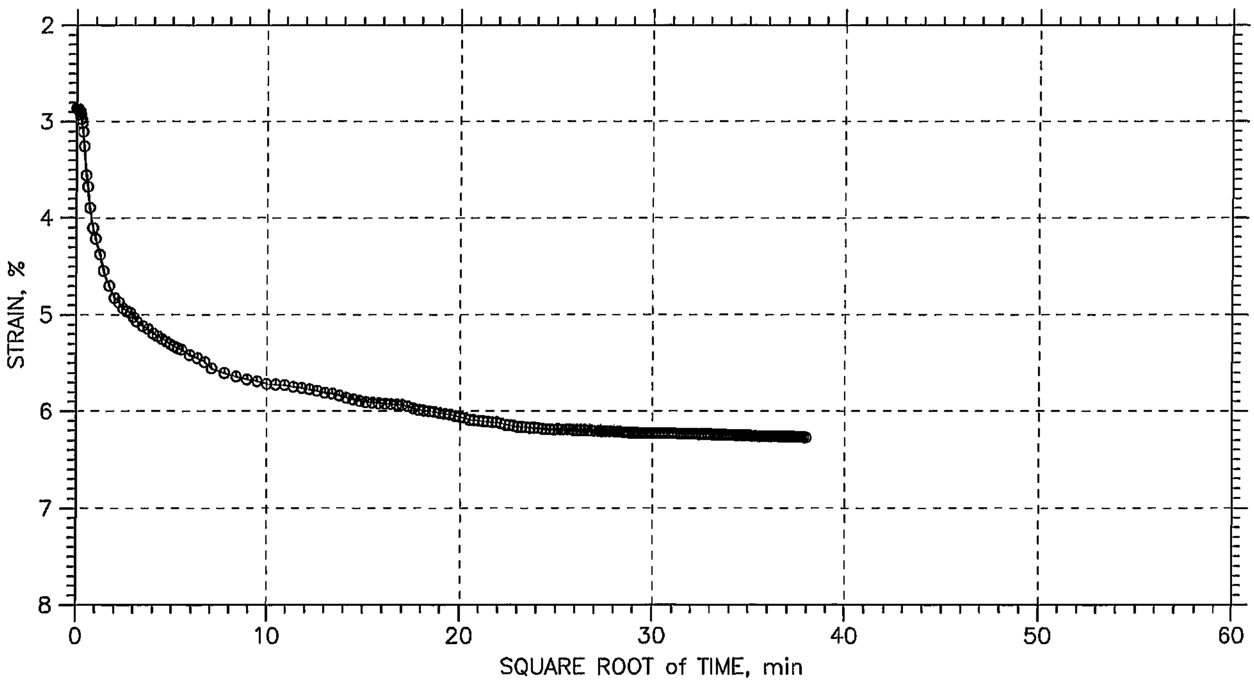
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 6 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

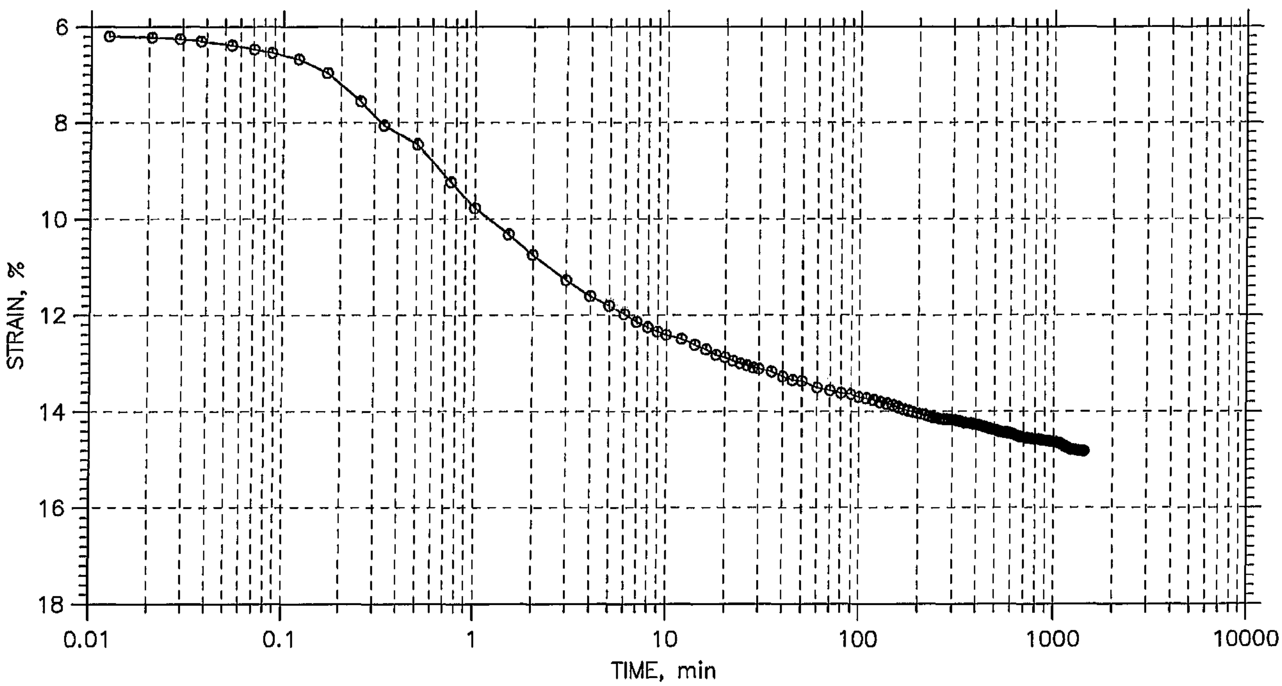
Mon, 06-AUG-2007 10:05:05

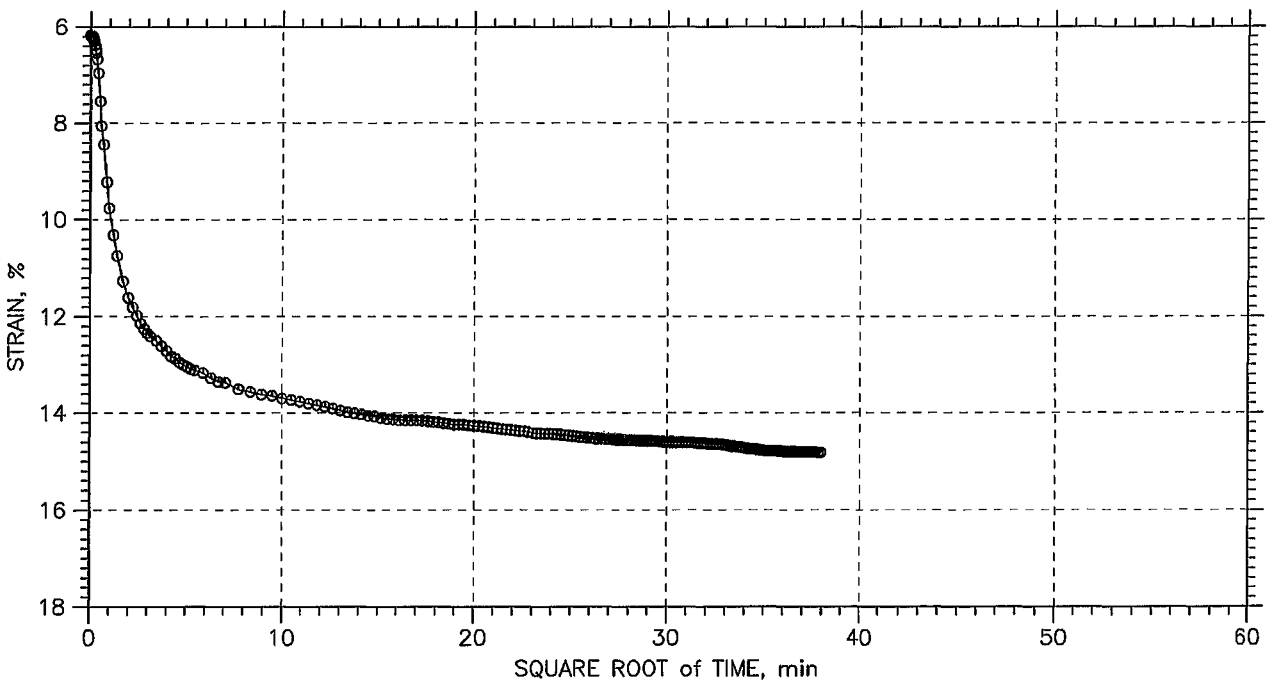
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 7 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

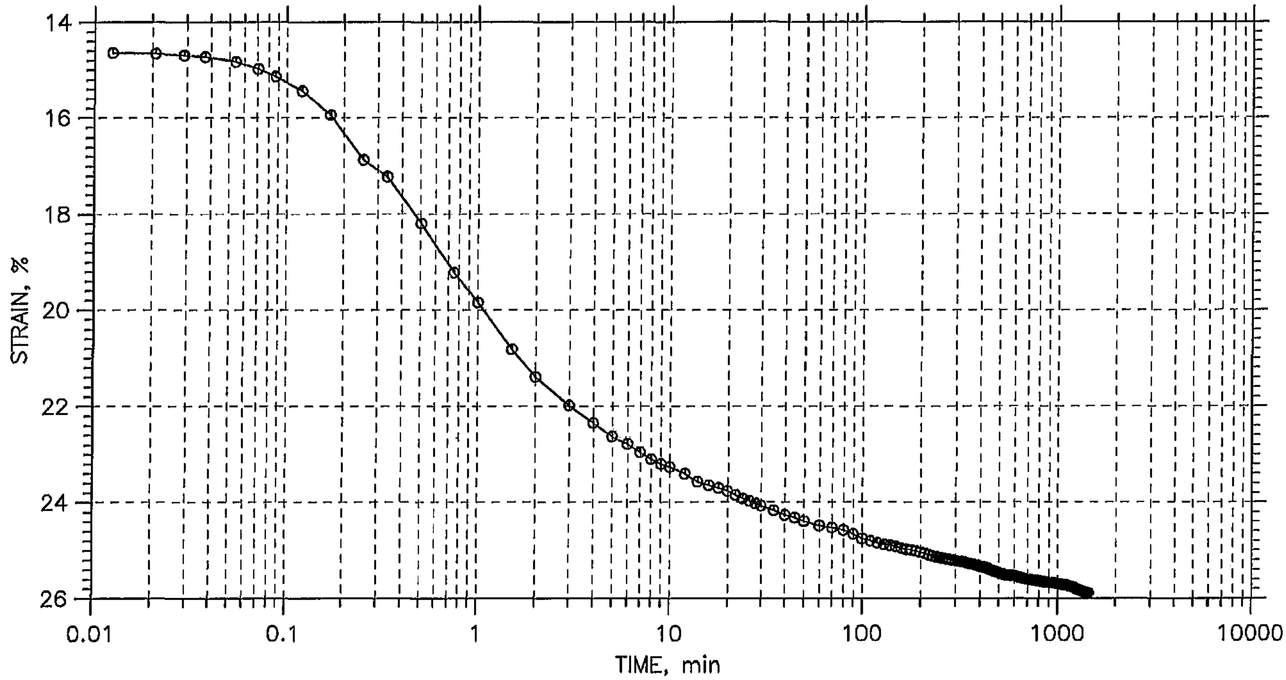
Mon, 06-AUG-2007 10:05:12

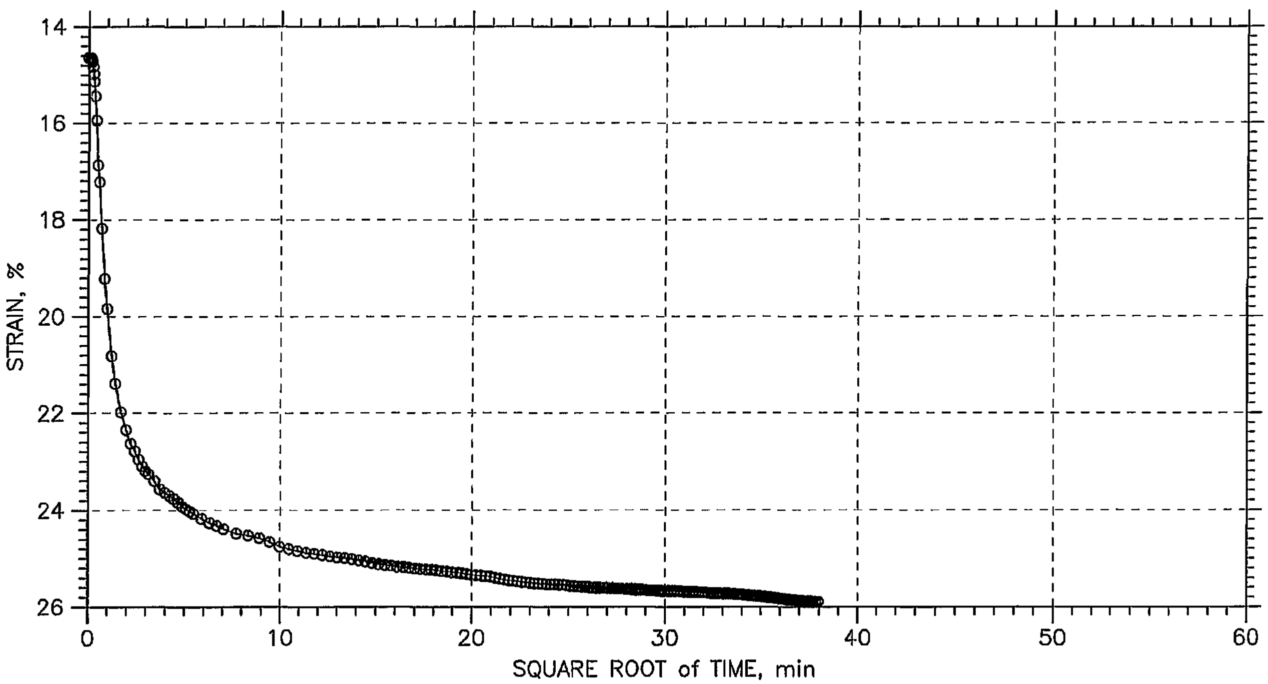
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 8 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

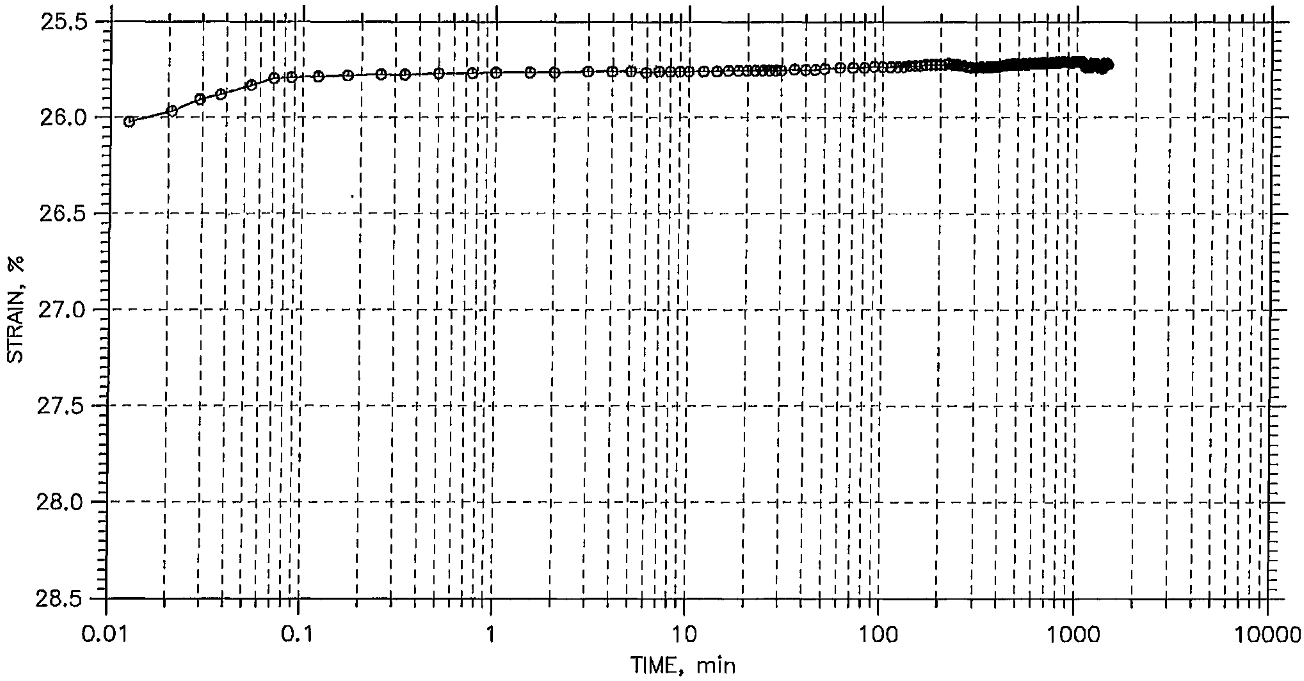
Mon, 06-AUG-2007 10:05:46

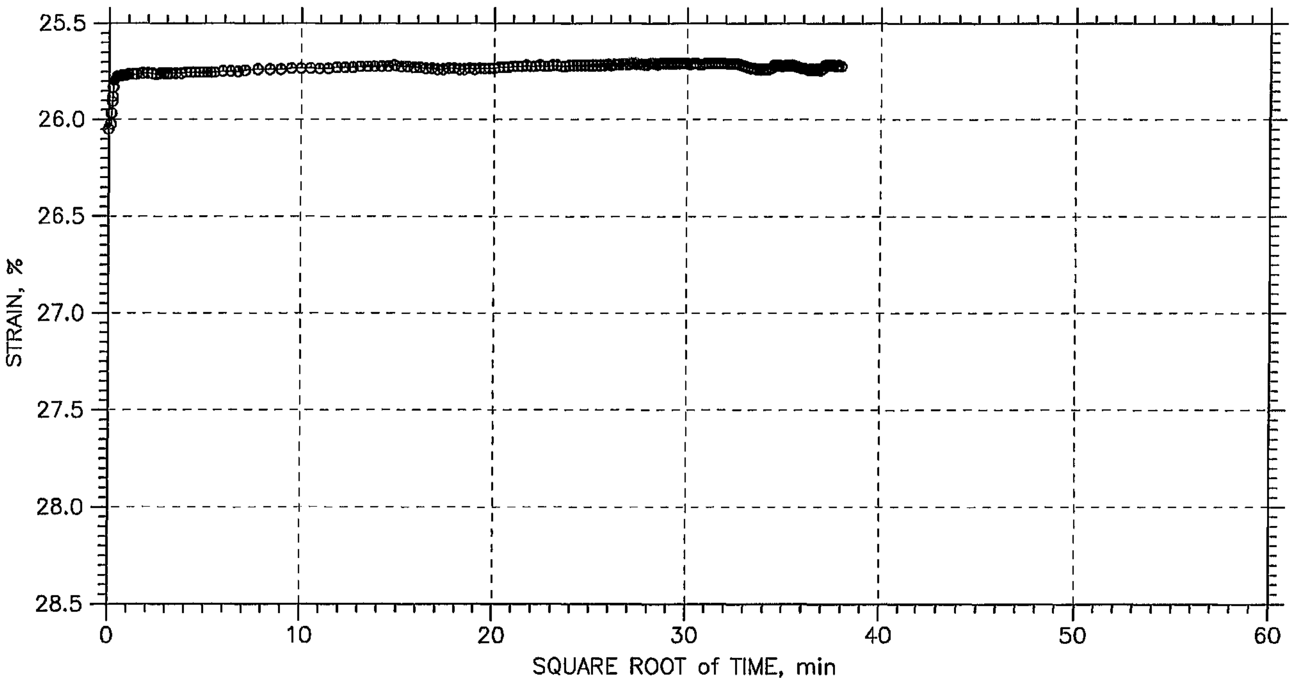
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 9 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

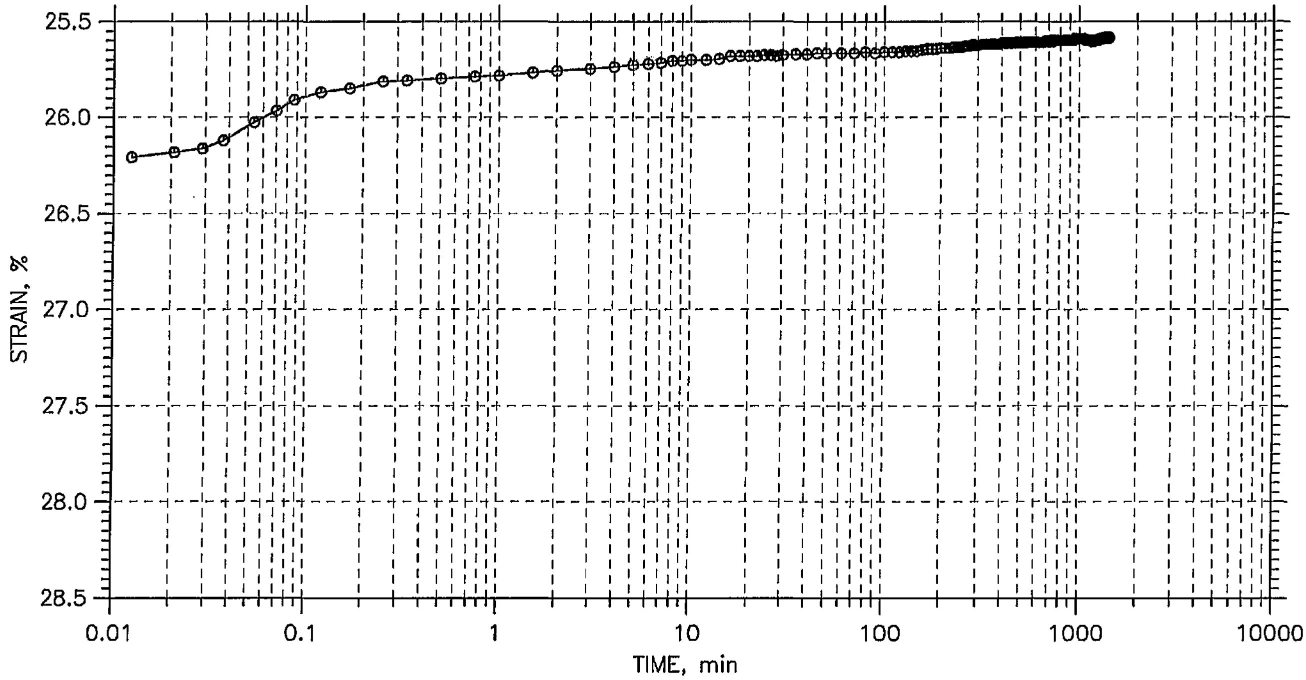
Mon, 06-AUG-2007 10:06:26

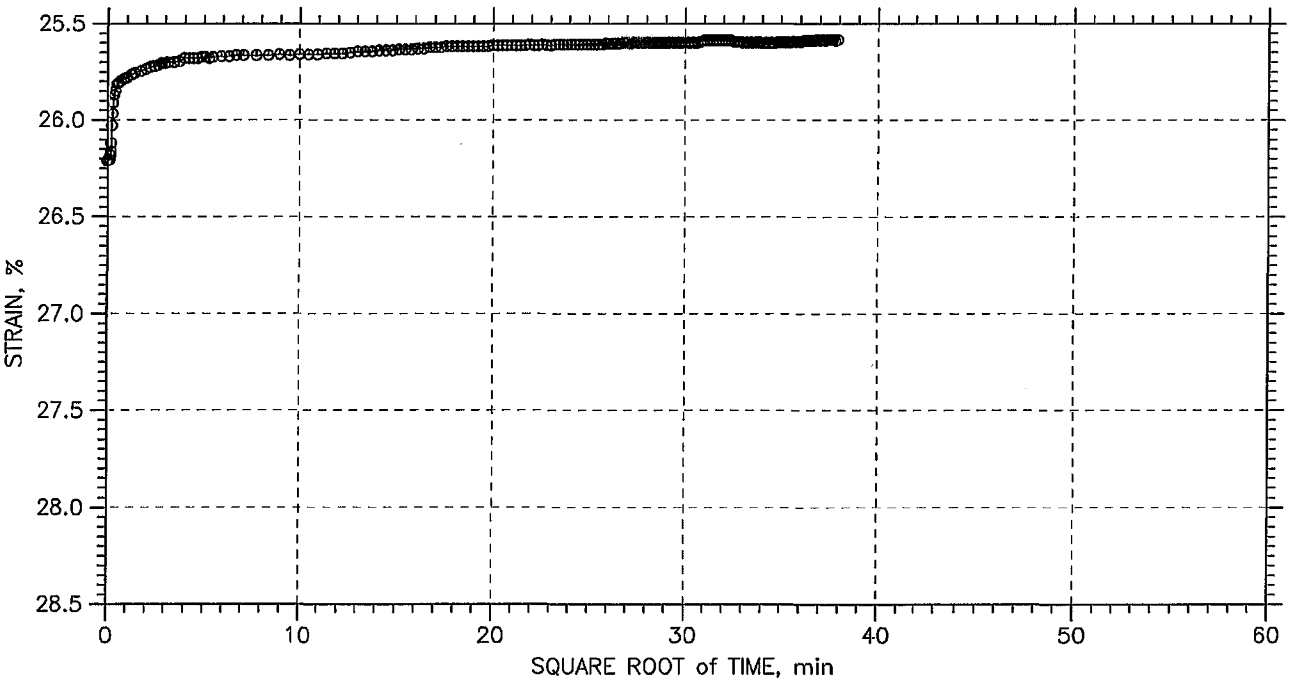
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 10 of 21

Stress: 0.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

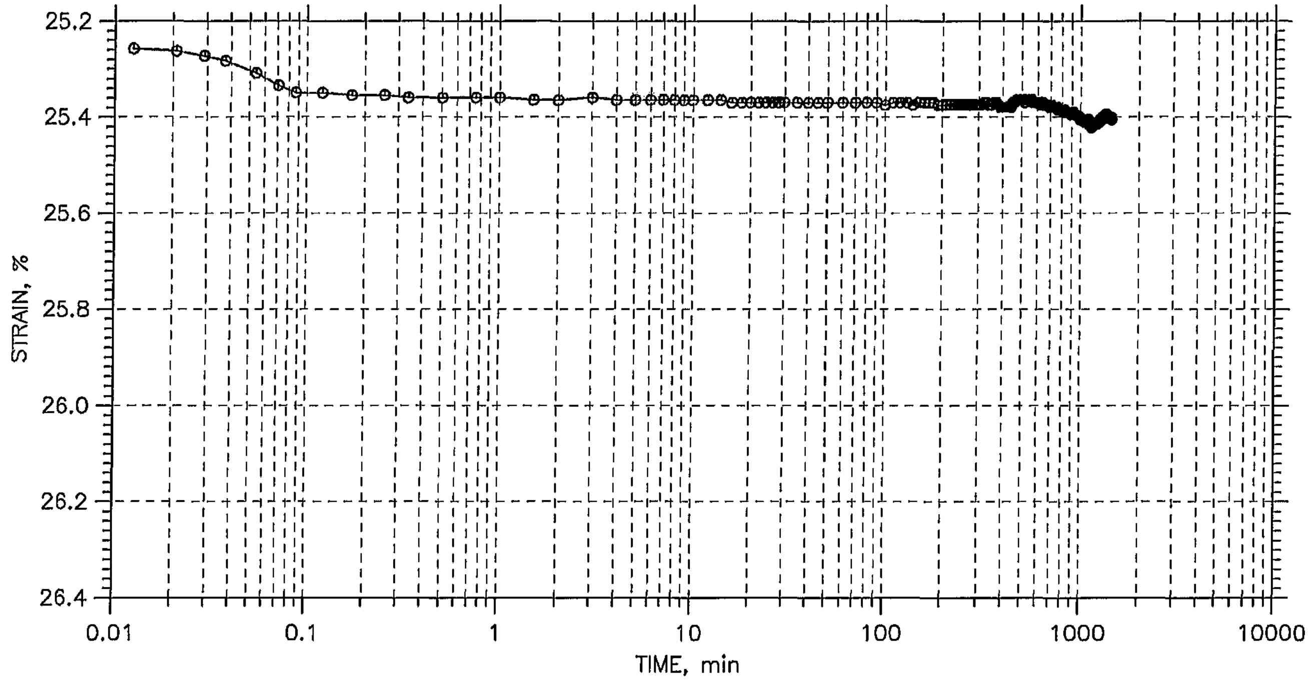
Mon, 06-AUG-2007 10:06:34

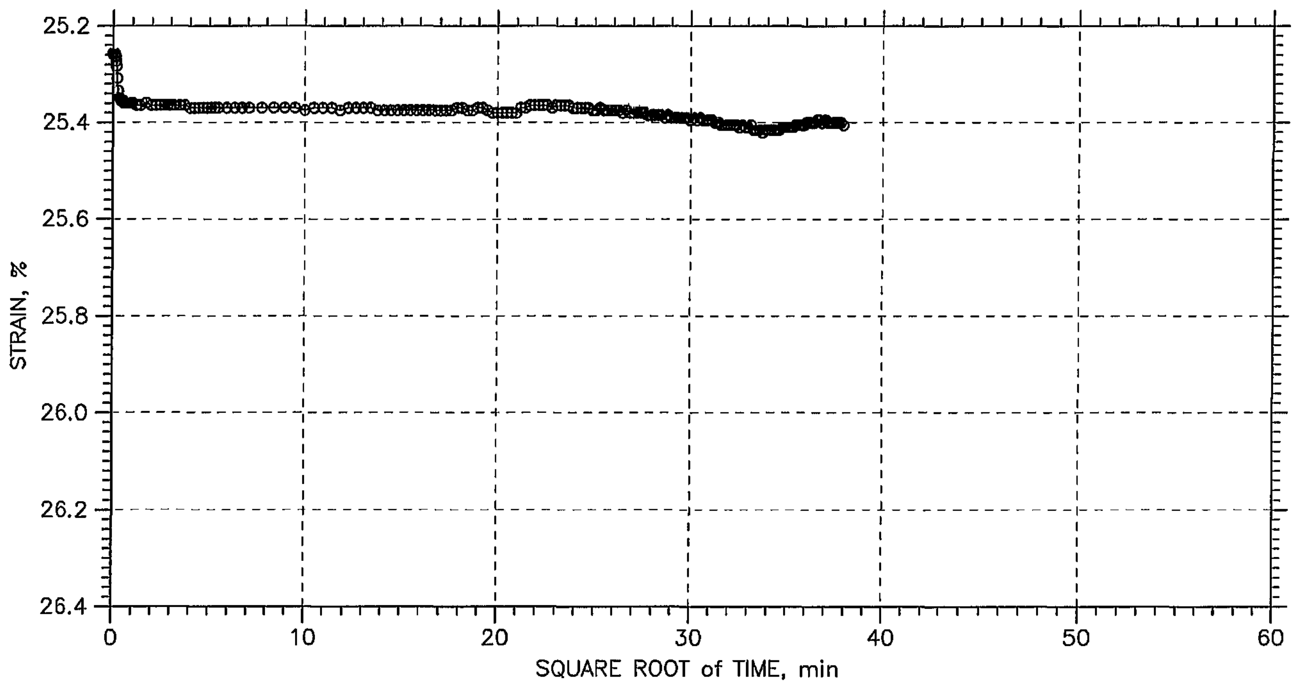
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 11 of 21

Stress: 0.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

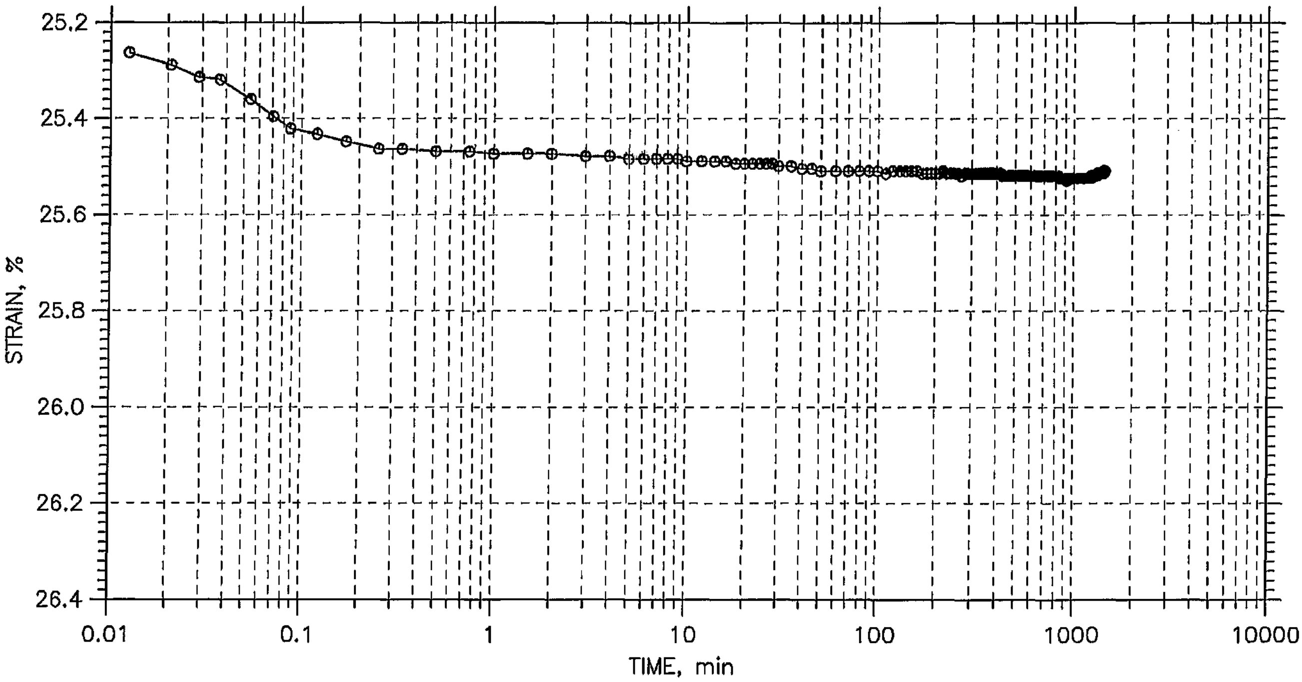
Mon, 06-AUG-2007 10:07:01

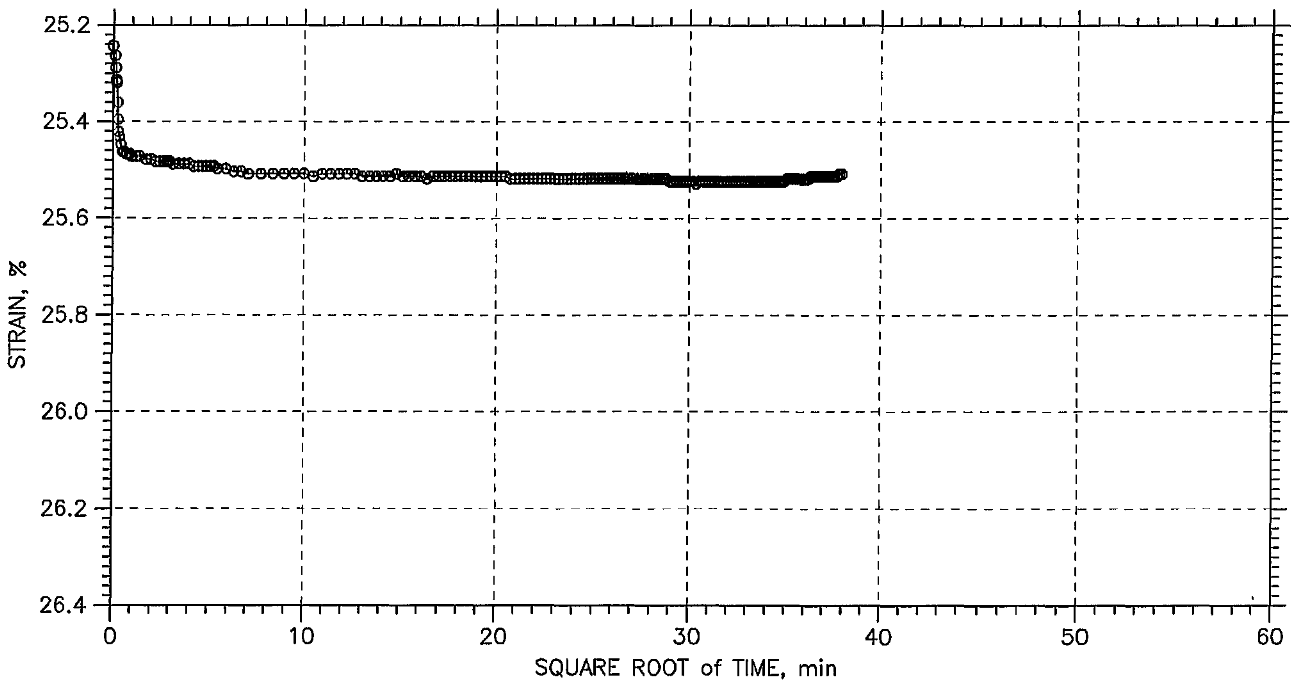
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 12 of 21

Stress: 1.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

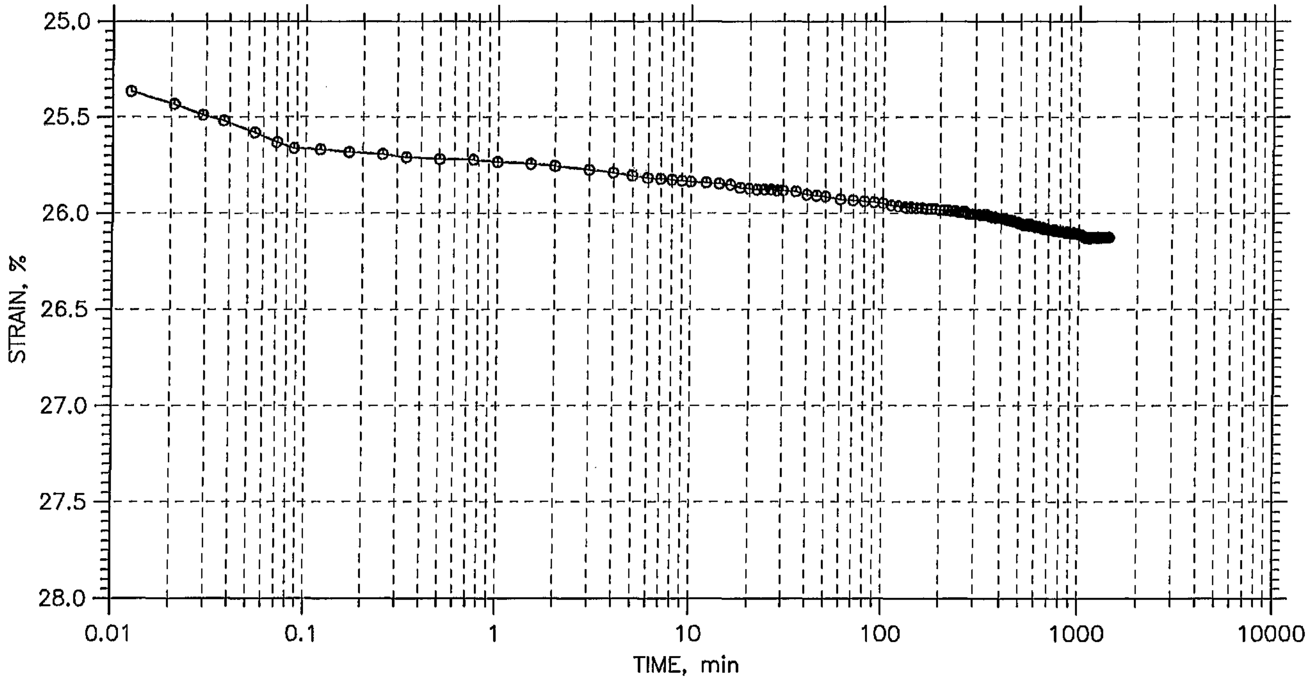
Mon, 06-AUG-2007 10:07:09

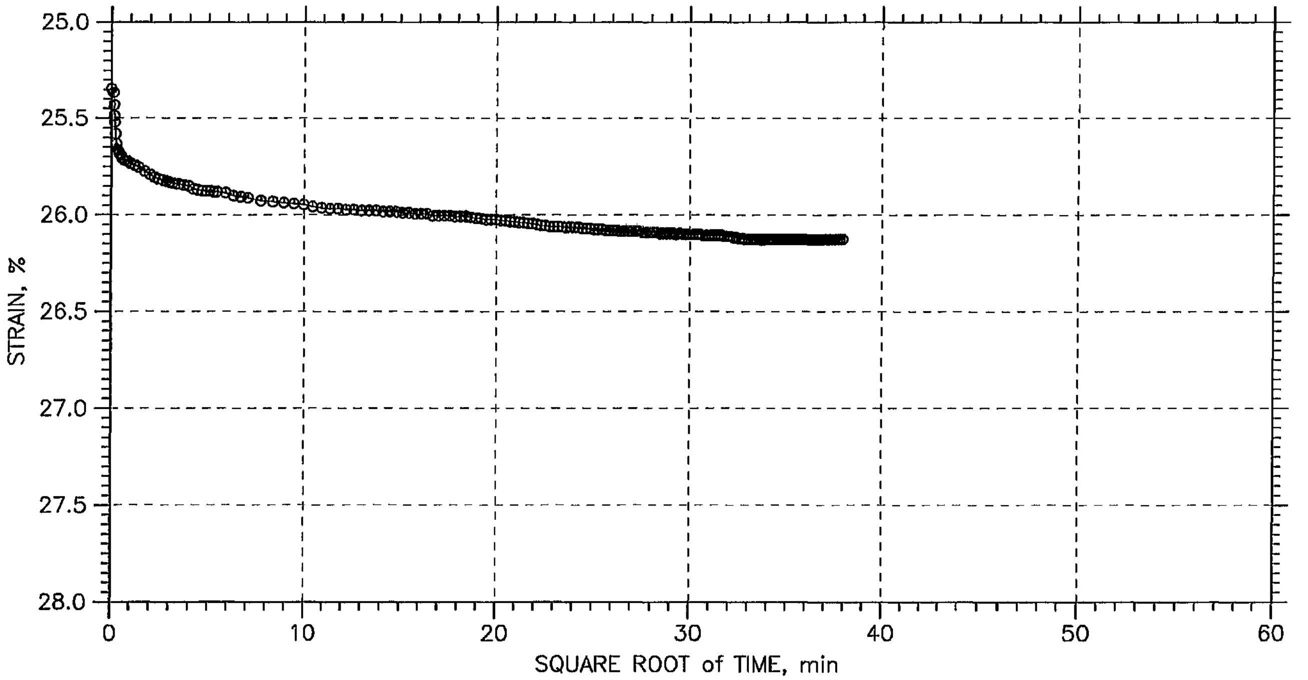
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 13 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

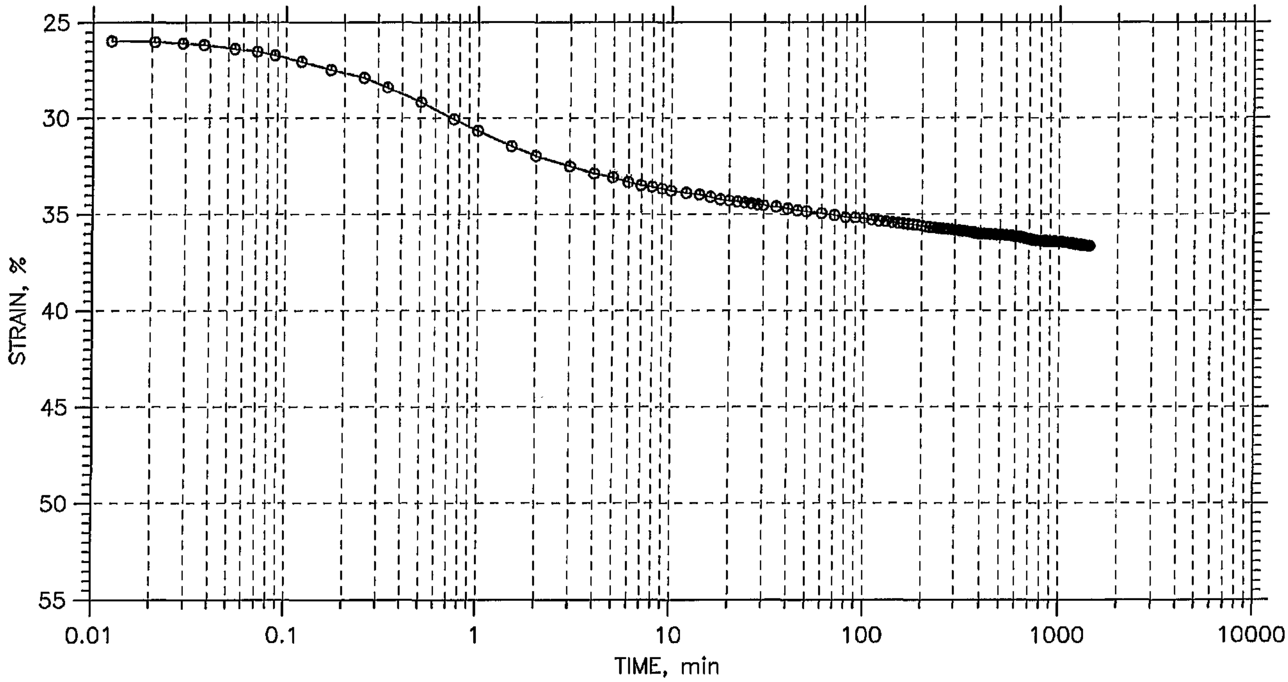
Mon, 06-AUG-2007 10:07:23

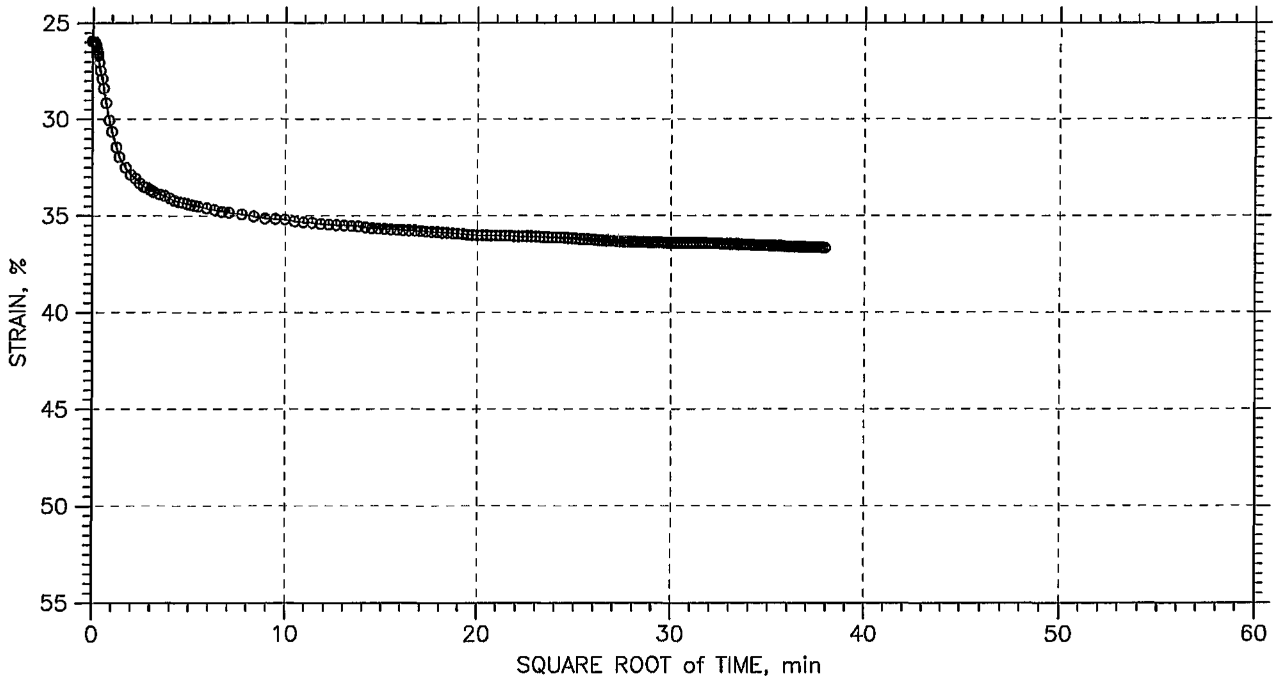
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 14 of 21

Stress: 6.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

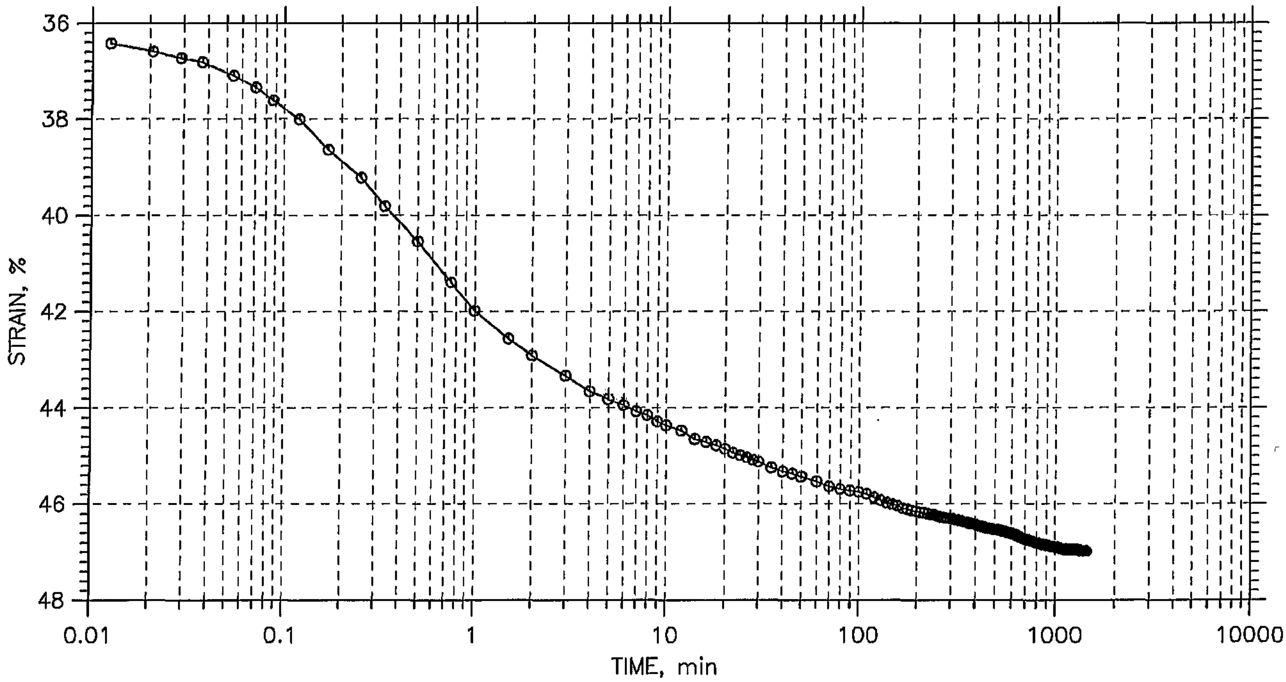
Mon, 06-AUG-2007 10:07:37

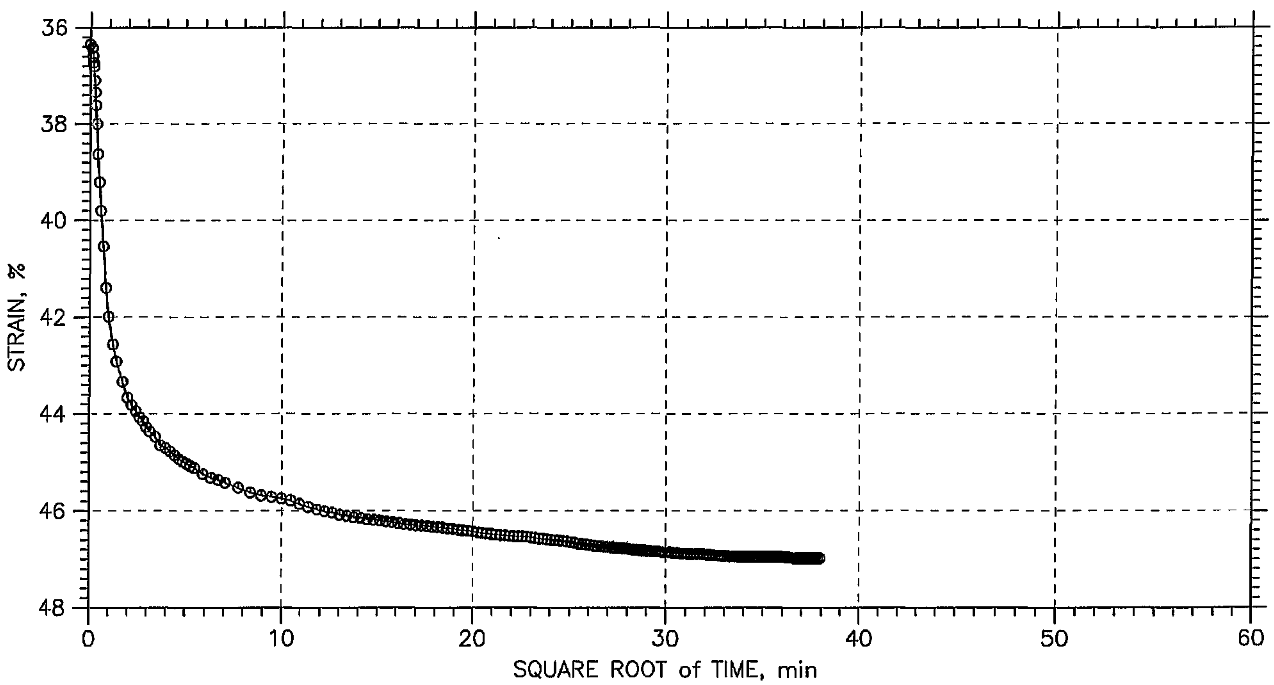
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 15 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

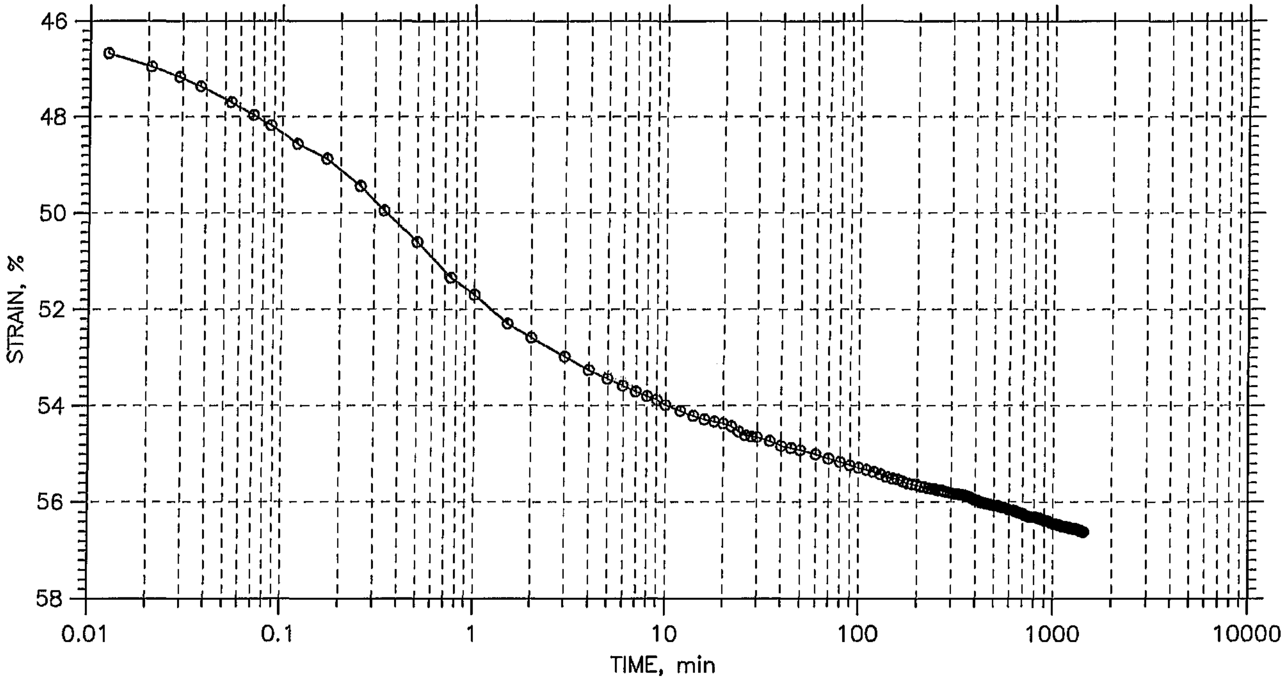
Mon, 06-AUG-2007 10:07:45

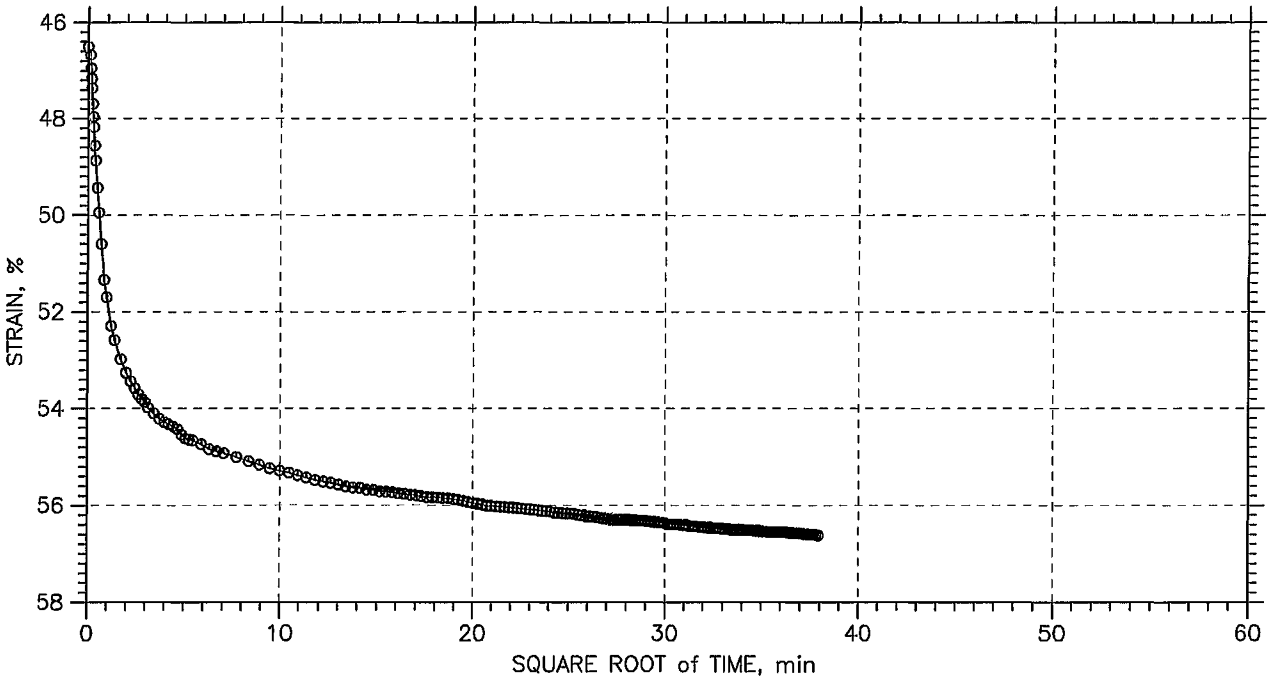
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 16 of 21

Stress: 25.6 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

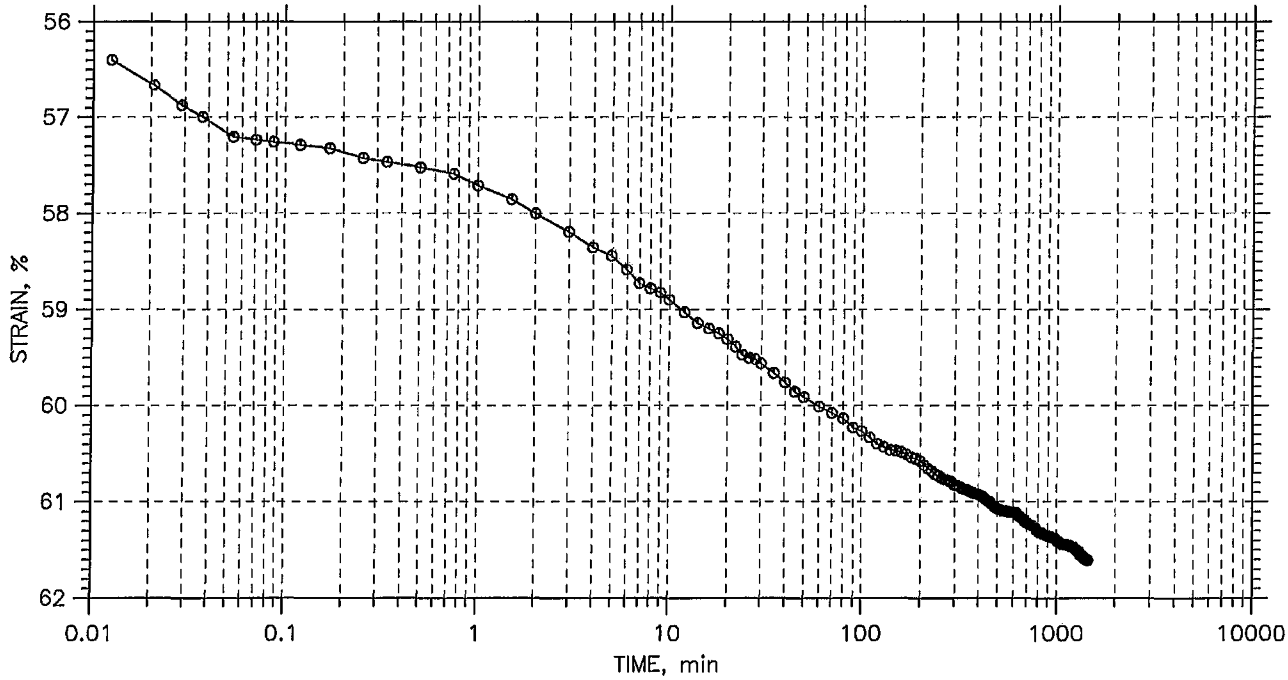
Mon, 06-AUG-2007 10:07:54

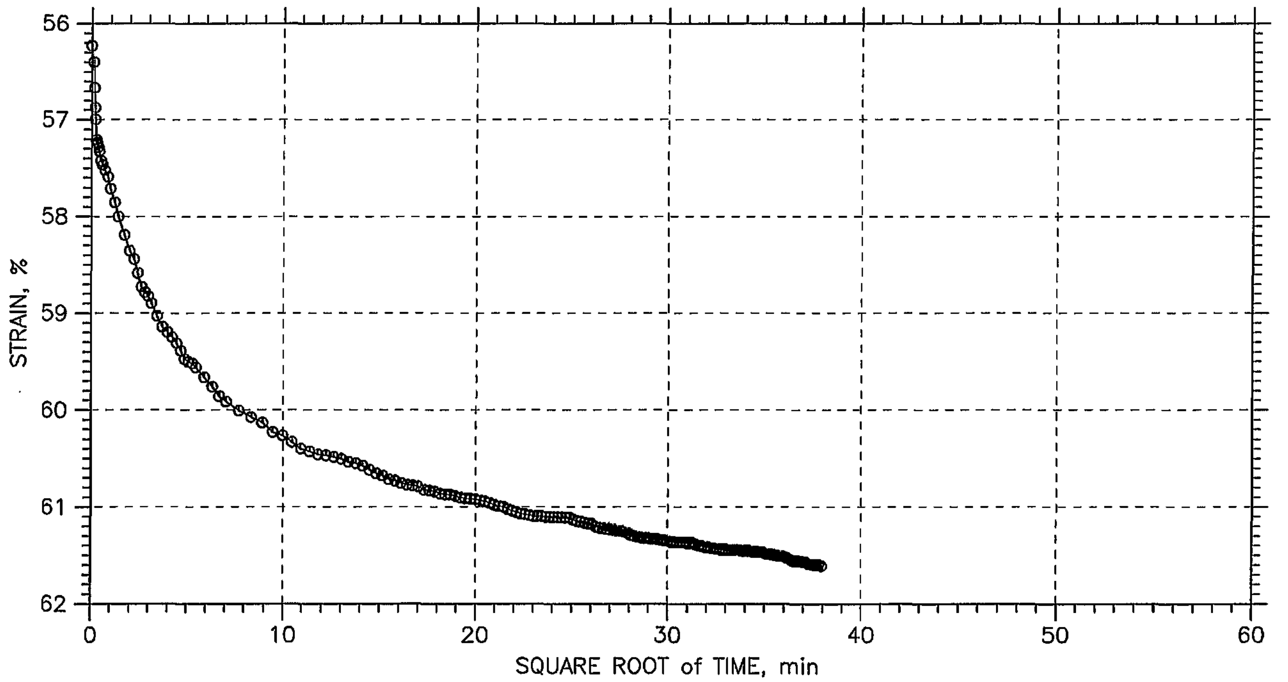
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 17 of 21

Stress: 38.4 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

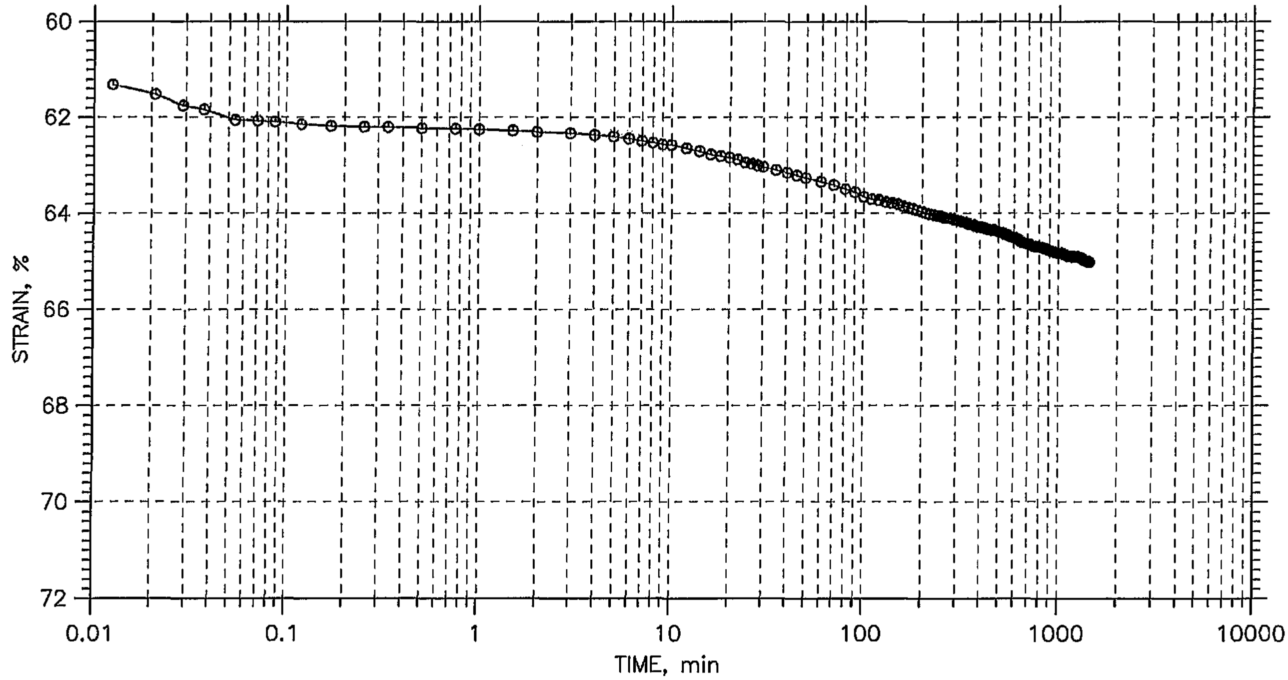
Mon, 06-AUG-2007 10:08:04

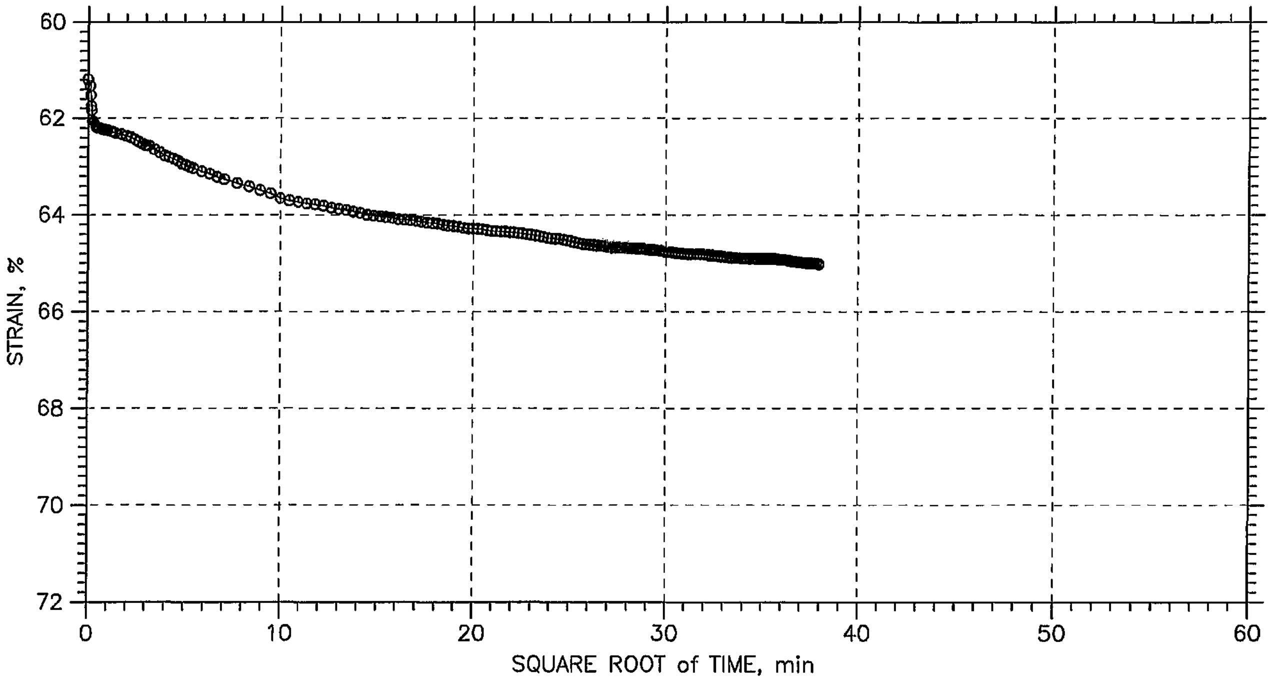
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 18 of 21

Stress: 51.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

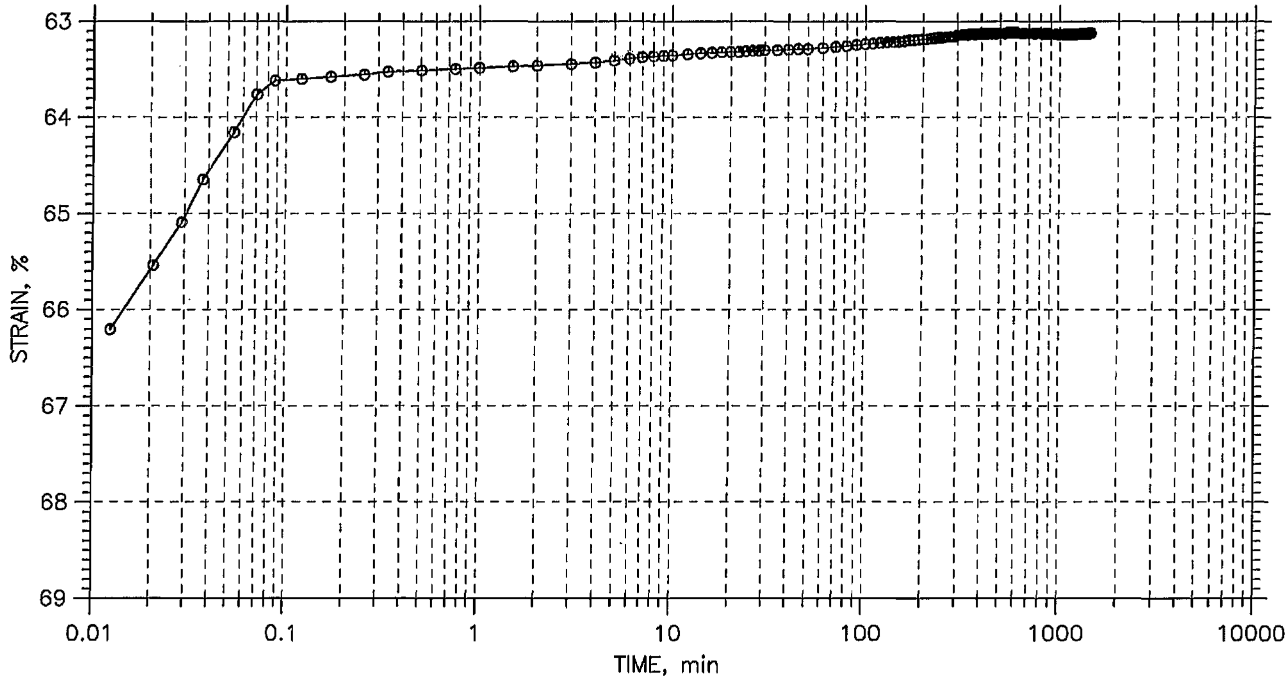
Mon, 06-AUG-2007 10:08:21

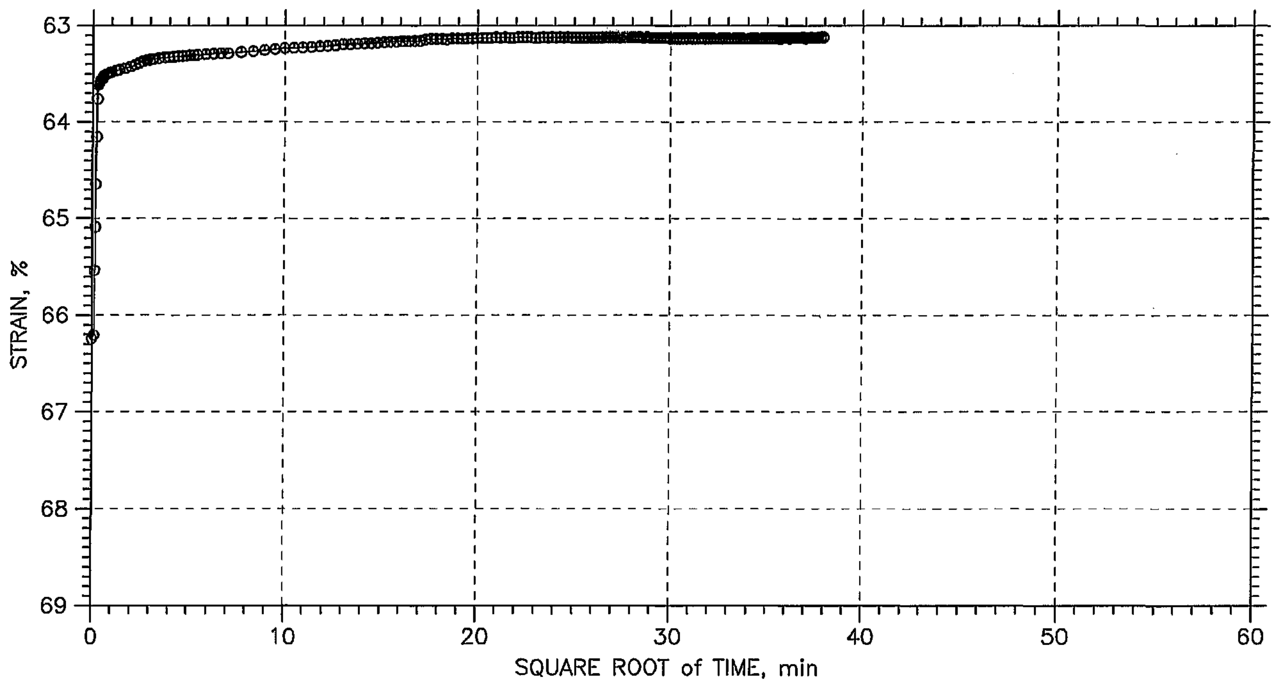
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 19 of 21

Stress: 12.8 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

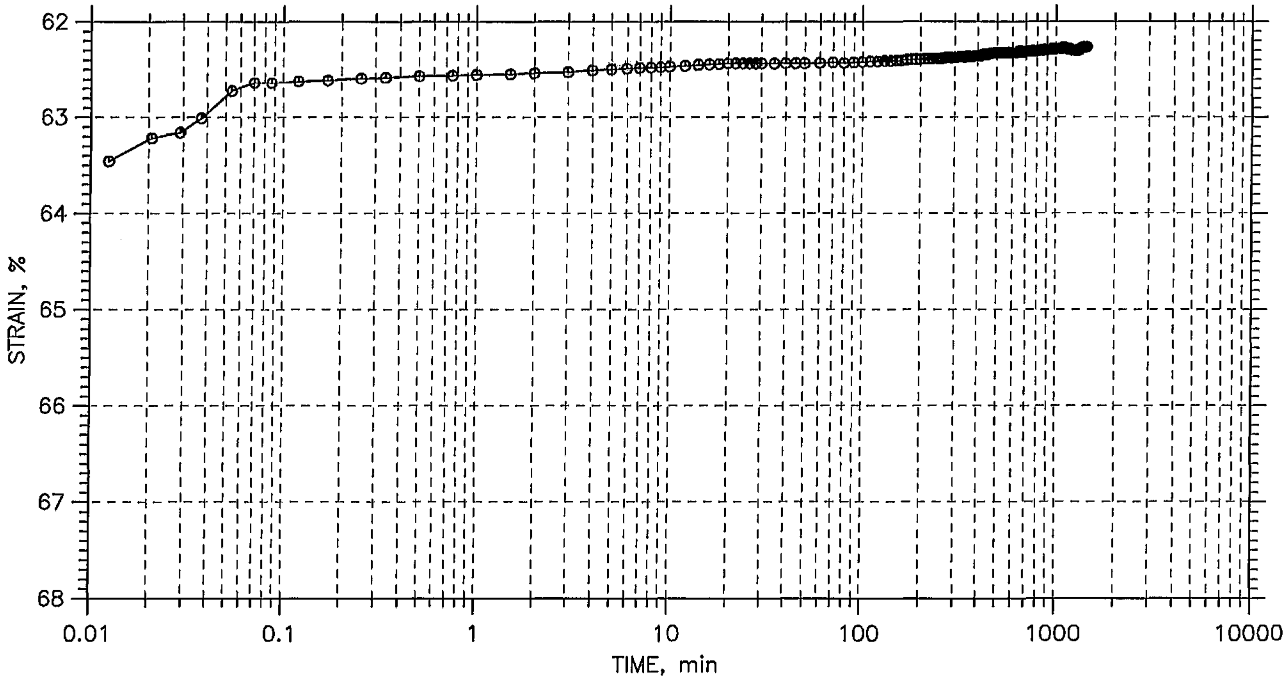
Mon, 06-AUG-2007 10:08:35

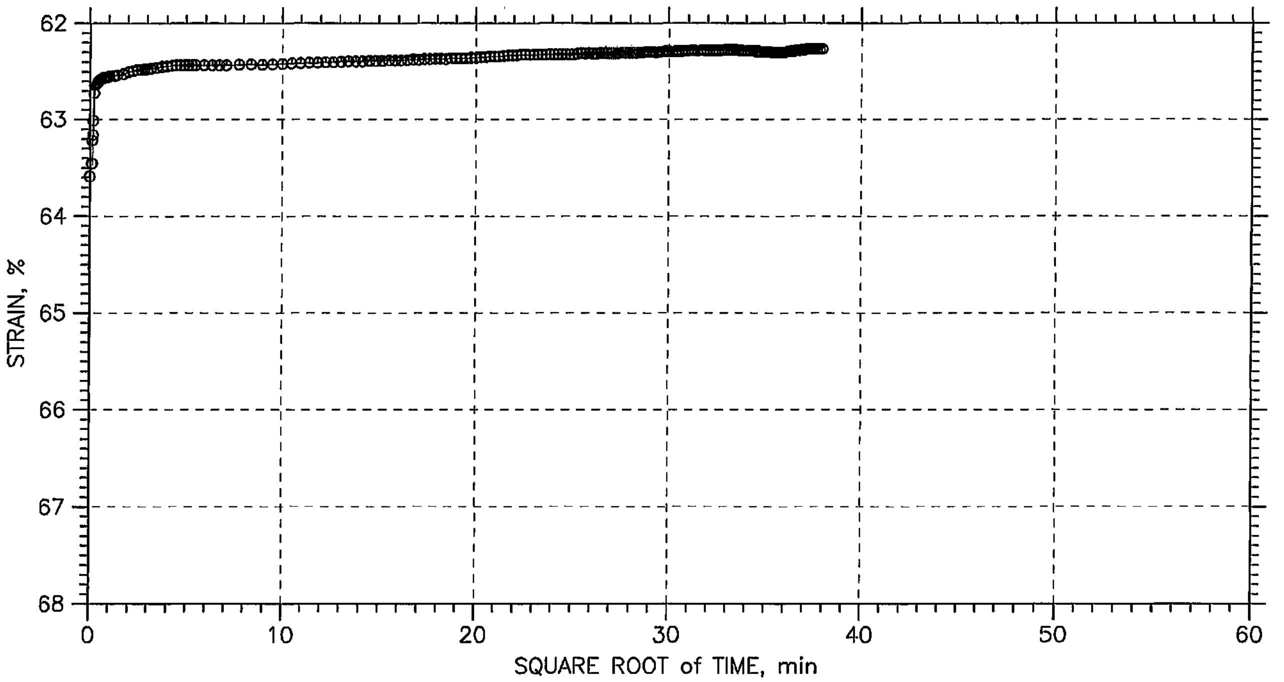
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 20 of 21

Stress: 3.2 tsf





GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

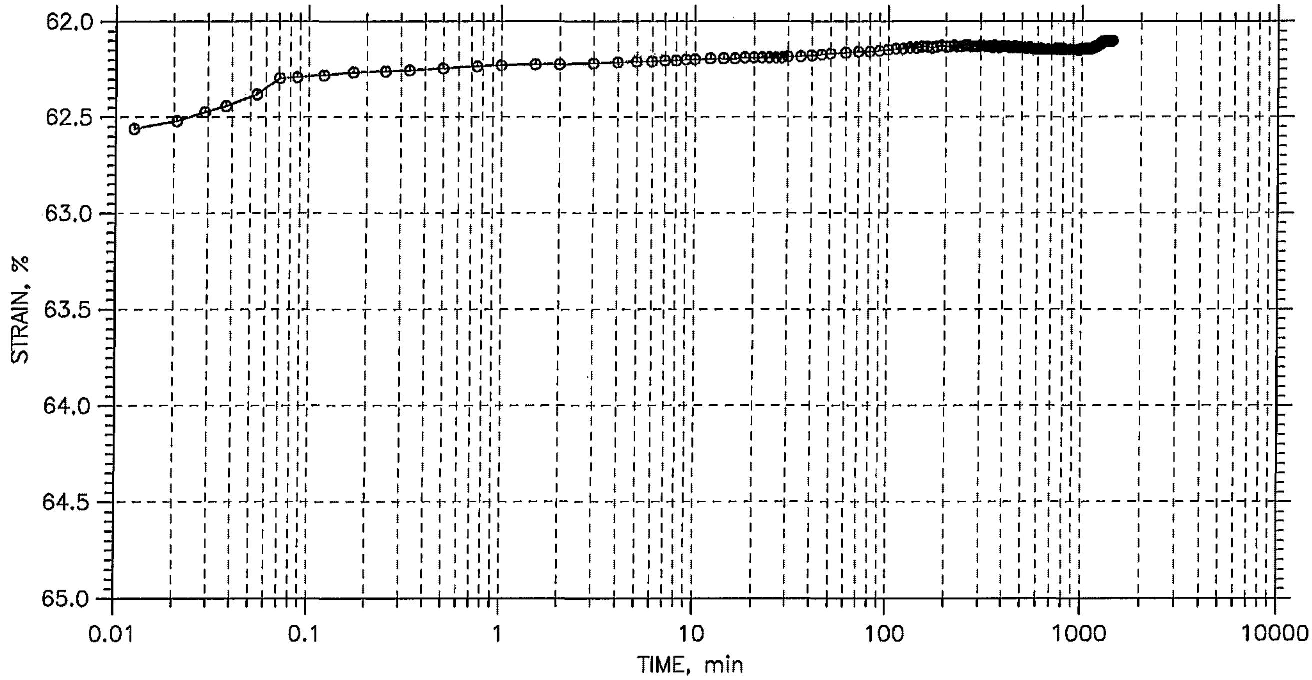
Mon, 06-AUG-2007 10:08:43

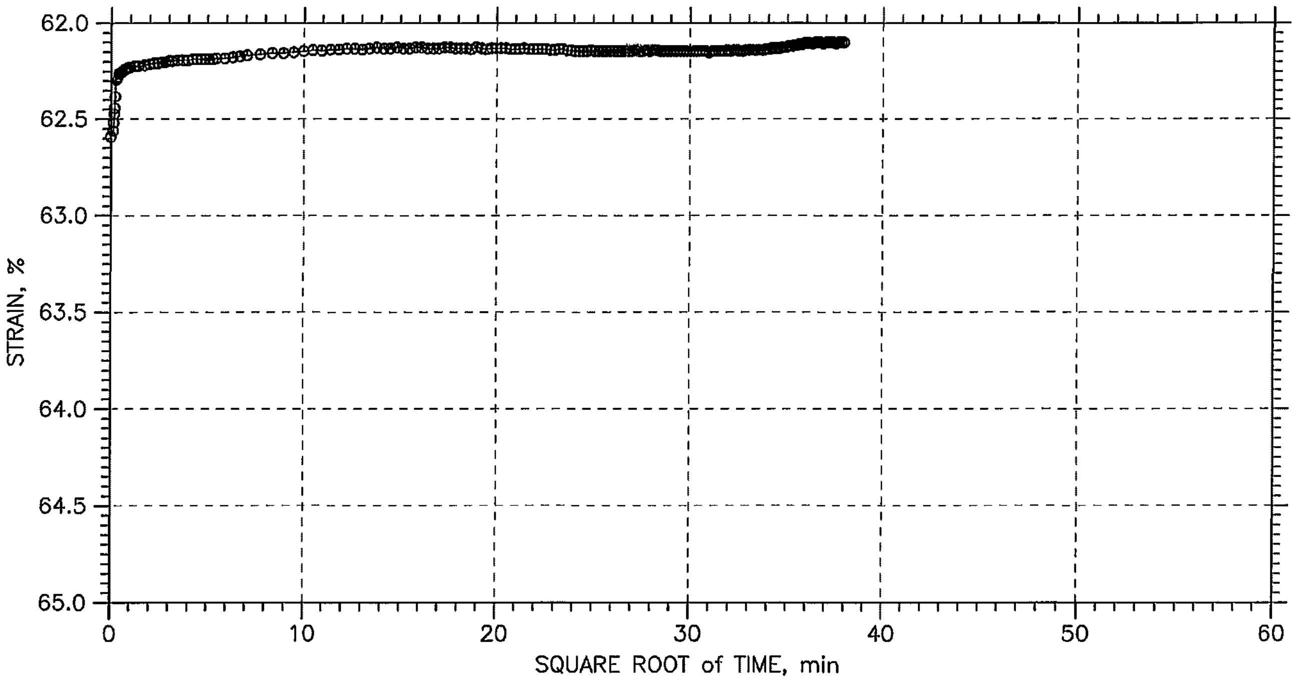
CONSOLIDATION TEST DATA

TIME CURVES

Constant Load Step: 21 of 21

Stress: 0.8 tsf

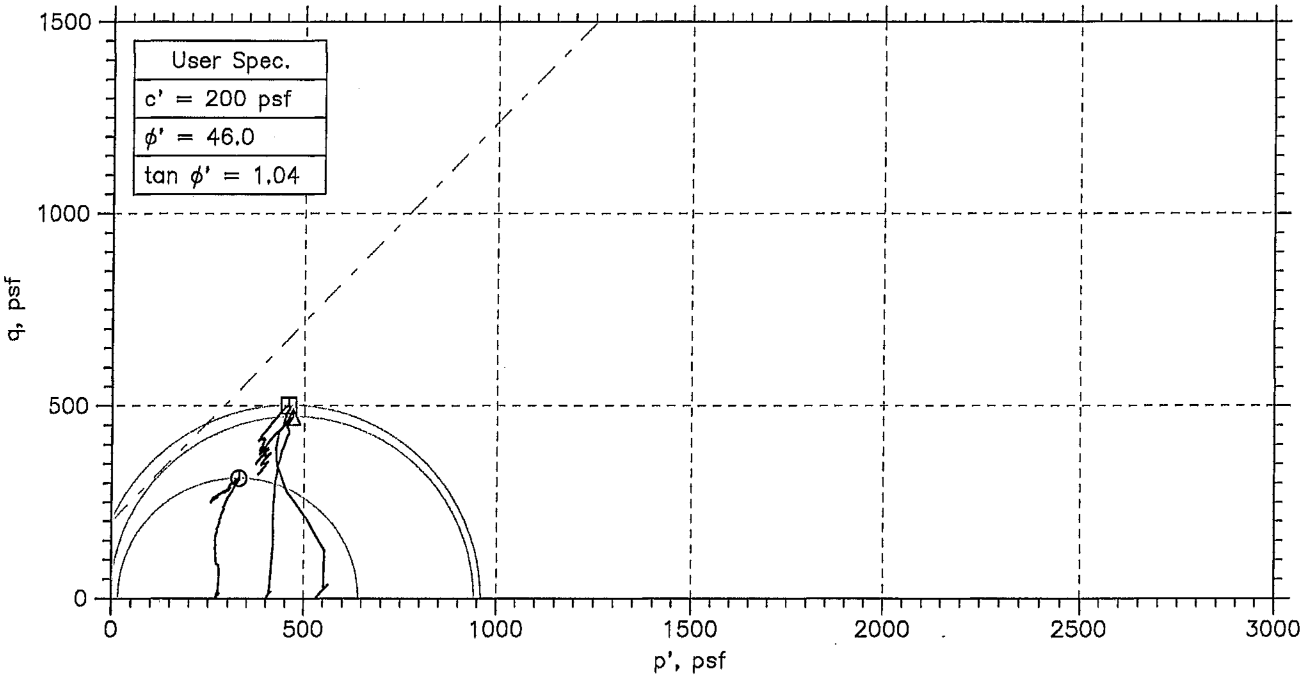


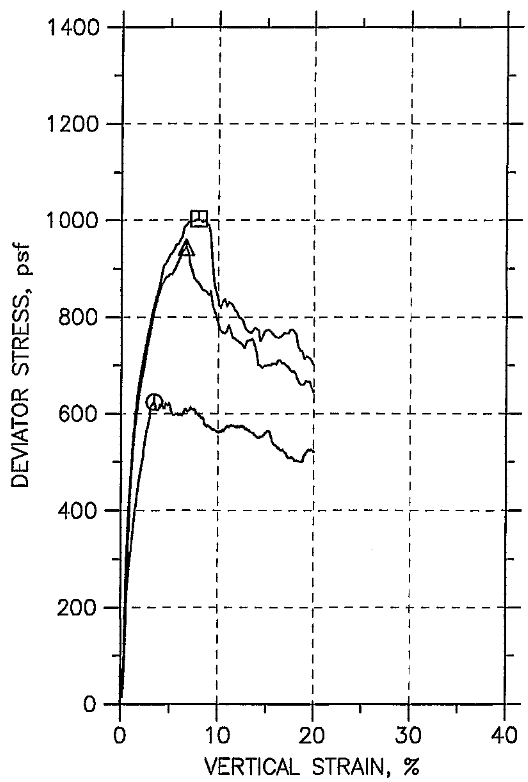


GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20054	Tested By: md	Checked By: jdt
	Sample No.: 0318-13	Test Date: 07/09/2007	Depth: 4-6 ft
	Test No.: C-37	Sample Type: tube	Elevation: ---
	Description: Wet, gray silt with sand		
	Remarks: System T		

Mon, 06-AUG-2007 10:09:10

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

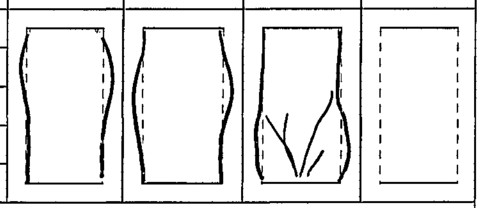




Symbol		⦶	△	⊡	
Sample No.		0318-07	0318-07	0318-07	
Test No.		CU-24-1	CU-24-2	CU-24-3	
Depth		6-8 ft	6-8 ft	6-8 ft	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	6	6.05	6.05	
	Water Content, %	297.3	194.3	231.8	
	Dry Density, pcf	18.08	25.33	22.47	
	Saturation, %	96.5	92.8	96.3	
	Void Ratio	8.32	5.65	6.5	
Before Shear	Water Content, %	243.1	258.5	205.7	
	Dry Density, pcf	22.28	21.12	25.72	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	6.56	6.98	5.55	
	Back Press., psf	7200	4320	7056	
Ver. Eff. Cons. Stress, psf		267.2	400.	532.4	
Shear Strength, psf		312.1	471.9	501.4	
Strain at Failure, %		3.4	6.66	7.92	
Strain Rate, %/min		0.02	0.02	0.02	
B-Value		0.95	0.97	0.95	
Estimated Specific Gravity		2.7	2.7	2.7	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga
Location: Syracuse, NY
Project No.: GTX-7143
Boring No.: 20052
Sample Type: tube

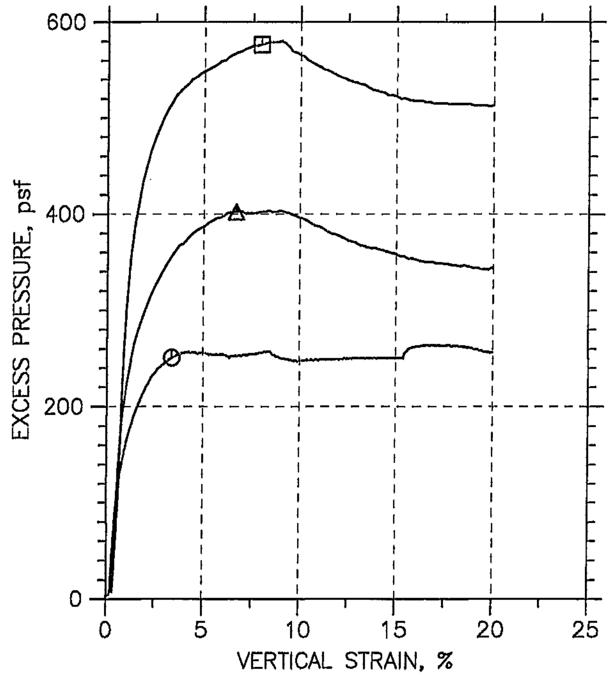


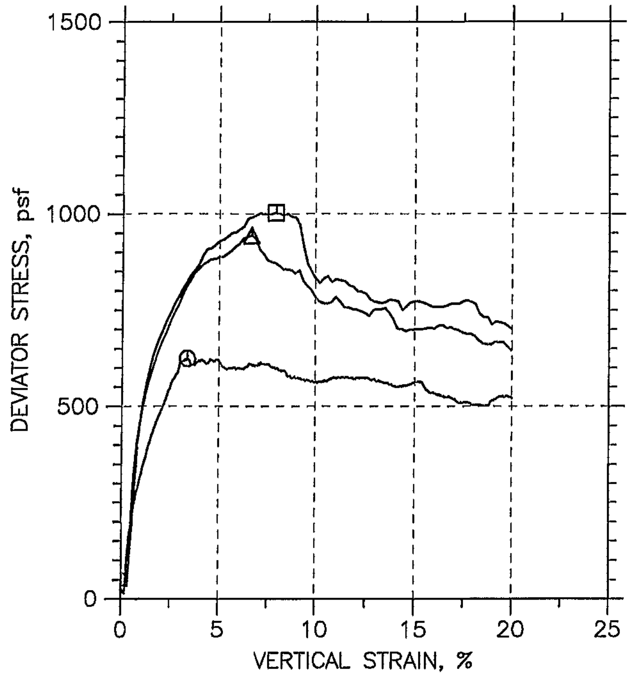
Description: Moist, light gray silt
Remarks: System B

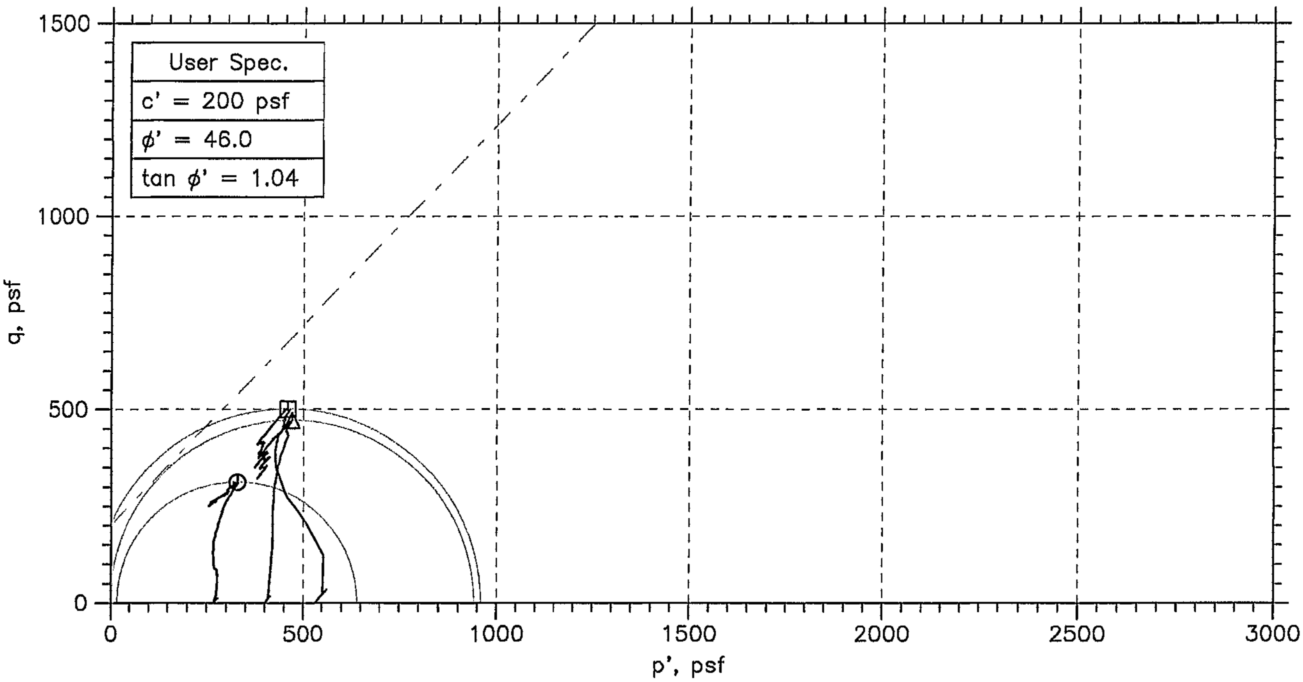
Mon, 06-AUG-2007 11:15:51

Phase calculations based on start and end of test.
* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





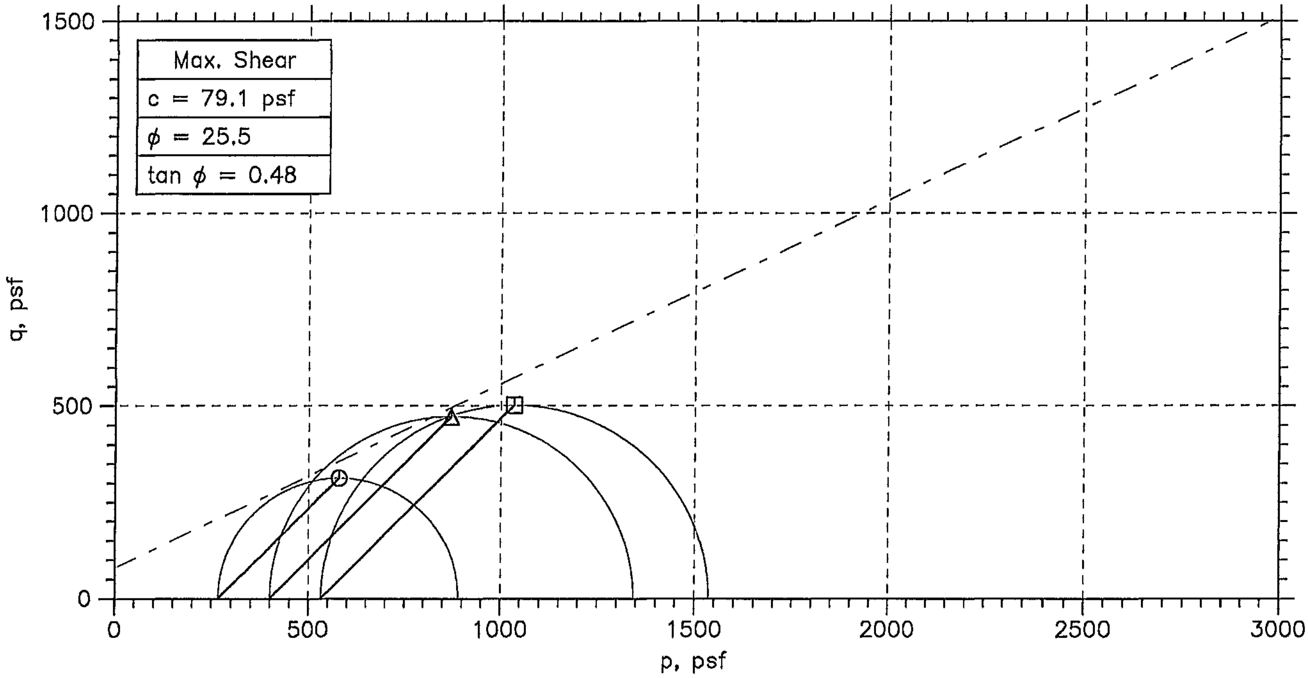


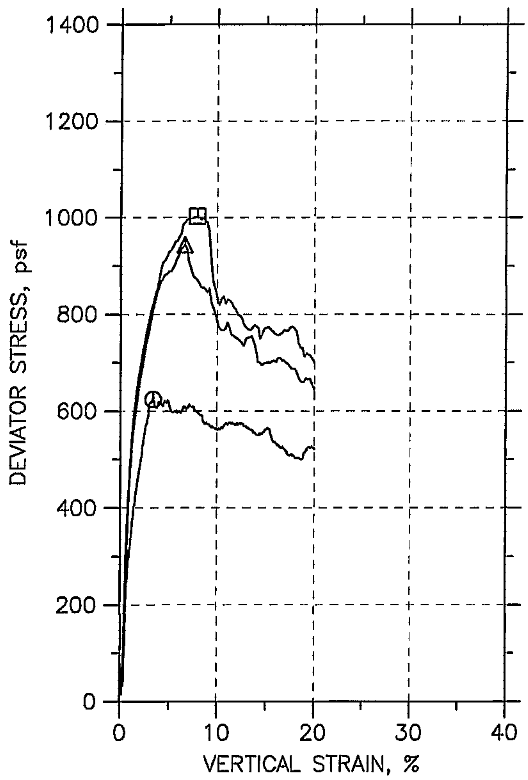
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⦶	0318-07	CU-24-1	6-8 ft	njh	07/16/07	jdt		7143-CU-24-1n.dat
△	0318-07	CU-24-2	6-8 ft	njh	07/12/07	jdt		7143-CU-24-2n.dat
⊡	0318-07	CU-24-3	6-8 ft	njh	07/10/07	jdt		7143-CU-24-3n.dat

GeoTesting express a subsidiary of Geocomp Corporation	Project: Onondaga	Location: Syracuse, NY	Project No.: GTX-7143
	Boring No.: 20052	Sample Type: tube	
	Description: Moist, light gray silt		
	Remarks: System B		

Mon, 06-AUG-2007 11:16:01

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767

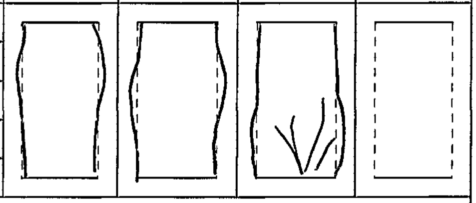




	Symbol	○	△	□	
	Sample No.	0318-07	0318-07	0318-07	
	Test No.	CU-24-1	CU-24-2	CU-24-3	
	Depth	6-8 ft	6-8 ft	6-8 ft	
Initial	Diameter, in	2.87	2.87	2.87	
	Height, in	6	6.05	6.05	
	Water Content, %	297.3	194.3	231.8	
	Dry Density, pcf	18.08	25.33	22.47	
	Saturation, %	96.5	92.8	96.3	
	Void Ratio	8.32	5.65	6.5	
Before Shear	Water Content, %	243.1	258.5	205.7	
	Dry Density, pcf	22.28	21.12	25.72	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	6.56	6.98	5.55	
	Back Press., psf	7200	4320	7056	
	Ver. Eff. Cons. Stress, psf	267.2	400.	532.4	
	Shear Strength, psf	312.1	471.9	501.4	
	Strain at Failure, %	3.4	6.66	7.92	
	Strain Rate, %/min	0.02	0.02	0.02	
	B-Value	0.95	0.97	0.95	
	Estimated Specific Gravity	2.7	2.7	2.7	
	Liquid Limit	---	---	---	
	Plastic Limit	---	---	---	

GeoTesting express
a subsidiary of Geocomp Corporation

Project: Onondaga	
Location: Syracuse, NY	
Project No.: GTX-7143	
Boring No.: 20052	
Sample Type: tube	
Description: Moist, light gray silt	
Remarks: System B	



Phase calculations based on start and end of test.

* Saturation is set to 100% for phase calculations.

Mon, 06-AUG-2007 11:16:26

INDEX TESTING

DATA

GeoTesting express
a subsidiary of Geocomp Corporation

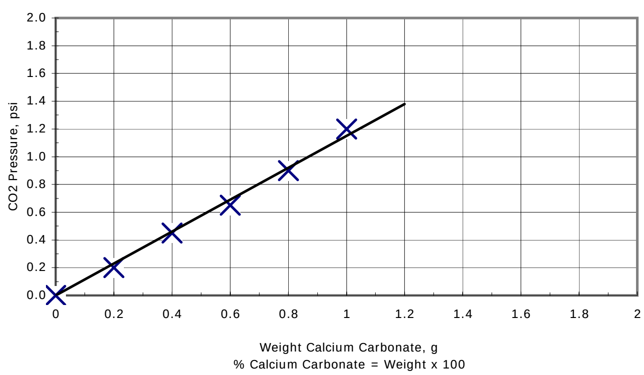
Client:	Parsons Engineering Science
Project Name:	Onondaga
Project Location:	Syracuse, NY
GTX #:	7143
Report Date:	08/10/07
Tested By:	jbr
Checked By:	jdt

Calcium Carbonate Content of Soils by ASTM D 4373

Boring ID	Sample ID	Depth, ft	*CO_2 Pressure, psi	Weight $CaCO_3$, grams	Calcium Carbonate Content, %
OL-STA-20034	OL-0317-12	0-2	0.40	0.35	35
OL-STA-20034	OL-0317-14	6-8	0.10	0.09	9
OL-STA-20034	OL-0317-15	42-44	0.05	0.04	4
OL-STA-20036	OL-0317-17	19-21	0.50	0.43	43
OL-STA-20036	OL-0317-18	37-39	0.10	0.09	9
OL-STA-20036	OL-0317-19	6-8	0.10	0.09	9
OL-STA-20038	OL-0317-20	4-6			

Notes: Calcium Carbonate content precise to +/- 1.5%
*CO_2 Pressure is based on a 1 gram specimen.
The reported Calcium Carbonate Content (%) is based on one gram

Figure 1: Calibration Curve



GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10115	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-01	Test Date:	08/10/07	Checked By:	n/a
Depth :	26-28 ft	Sample Id:	53059		
Test Comment:	---				
Sample Description:	Moist, very dark brown silty clay				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-10115	OL-0317-01	26-28 ft	Moist, very dark brown silty clay	31.6

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 6:46:21 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10115	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-01	Test Date:	08/10/07	Checked By:	jdt
Depth :	26-28 ft	Test Id:	113093		
Test Comment:	---				
Sample Description:	Moist, very dark brown silty clay				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-1011	)L-0317-0	26-28 ft	Moist, very dark brown silty clay	2.87	6.00	116	31.6	88.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:47:34 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10115	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-01	Test Date:	08/10/07	Checked By:	jdt
Depth :	26-28 ft	Test Id:	113127		
Test Comment:	---				
Sample Description:	Moist, very dark brown silty clay				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-10115	OL-0317-01	26-28 ft	Moist, very dark brown silty clay	2.7

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:18:28 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10121	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-02	Test Date:	07/13/07	Checked By:	n/a
Depth :	40-42 ft	Sample Id:	53060		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-10121	OL-0317-02	40-42 ft	Wet, brown silt	24.4

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 9:51:16 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10121	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-02	Test Date:	06/29/07	Checked By:	jdt
Depth :	40-42 ft	Test Id:	113128		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-10121	OL-0317-02	40-42 ft	Moist, brown silt	2.73

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 9:51:24 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-10121	Sample Type: tube	Tested By:	md
Sample ID: OL-0317-02	Test Date: 07/13/07	Checked By:	jdt
Depth : 40-42 ft	Test Id: 113094		
Test Comment: ---			
Sample Description: Moist, brown silt			
Sample Comment: ---			

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-1012	)L-0317-0	40-42 ft	Moist, brown silt	2.87	6.00	118	28.4	92.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 9:51:40 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10124	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-03	Test Date:	07/13/07	Checked By:	n/a
Depth :	42-44 ft	Sample Id:	53061		
Test Comment:	---				
Sample Description:	Wet, grayish brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-10124	OL-0317-03	42-44 ft	Wet, grayish brown silt	50.1

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 9:58:52 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10124	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-03	Test Date:	07/13/07	Checked By:	jdt
Depth :	42-44 ft	Test Id:	113095		
Test Comment:	---				
Sample Description:	Wet, grayish brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-1012	)L-0317-0	42-44 ft	Wet, grayish brown silt	2.87	6.00	109	50.1	72.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 9:58:57 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10124	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-03	Test Date:	07/20/07	Checked By:	jdt
Depth :	42-44 ft	Test Id:	113129		
Test Comment:	---				
Sample Description:	Wet, grayish brown silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-10124	OL-0317-03	42-44 ft	Wet, grayish brown silt	2.7

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:48:29 AM

GeoTesting
express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20056	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-04	Test Date:	07/13/07	Checked By:	n/a
Depth :	41-43 ft	Sample Id:	53062		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20056	OL-0317-04	41-43 ft	Moist, brown silt	39.2

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 10:02:11 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20056	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-04	Test Date:	07/13/07	Checked By:	jdt
Depth :	41-43 ft	Test Id:	113096		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
.-STA-200	)L-0317-0	41-43 ft	Moist, brown silt	2.87	6.01	110	39.2	79.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:02:17 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20056	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-04	Test Date:	07/20/07	Checked By:	jdt
Depth :	41-43 ft	Test Id:	113130		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20056	OL-0317-04	41-43 ft	Moist, brown silt	2.72

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20067	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-06	Test Date:	07/13/07	Checked By:	n/a
Depth :	46-48 ft	Sample Id:	53064		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20067	OL-0317-06	46-48 ft	Moist, brown silt	29.2

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 10:06:38 AM

GeoTesting
express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20067	Sample Type: tube	Tested By:	md
Sample ID:OL-0317-06	Test Date: 07/13/07	Checked By:	jdt
Depth : 46-48 ft	Test Id: 113097		
Test Comment: ---			
Sample Description: Moist, brown silt			
Sample Comment: ---			

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-200€	)L-0317-0	46-48 ft	Moist, brown silt	2.87	6.20	115	29.2	89.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:07:02 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20067	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-06	Test Date:	07/20/07	Checked By:	jdt
Depth :	46-48 ft	Test Id:	113131		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20067	OL-0317-06	46-48 ft	Moist, brown silt	2.72

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:49:22 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20068	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-07	Test Date:	07/13/07	Checked By:	n/a
Depth :	38-40 ft	Sample Id:	53065		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20068	OL-0317-07	38-40 ft	Moist, brown silt	34.9

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 10:09:15 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20068	Sample Type: tube	Tested By:	md
Sample ID:OL-0317-07	Test Date: 07/13/07	Checked By:	jdt
Depth : 38-40 ft	Test Id: 113098		
Test Comment: ---			
Sample Description: Moist, brown silt			
Sample Comment: ---			

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-2006	)L-0317-0	38-40 ft	Moist, brown silt	2.87	6.05	113	34.9	84.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:09:23 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20068	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-07	Test Date:	07/18/07	Checked By:	jdt
Depth :	38-40 ft	Test Id:	113132		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20068	OL-0317-07	38-40 ft	Moist, brown silt	2.61

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:49:33 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20069	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-09	Test Date:	07/13/07	Checked By:	n/a
Depth :	30-32 ft	Sample Id:	53067		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20069	OL-0317-09	30-32 ft	Moist, brown silt	28.8

Notes: Temperature of Drying : 110º Celsius

printed 7/13/2007 10:12:28 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20069	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-09	Test Date:	07/13/07	Checked By:	jdt
Depth :	30-32 ft	Test Id:	113099		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-200(	)L-0317-0	30-32 ft	Moist, brown silt	2.87	6.22	109	28.8	84.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:12:37 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20069	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-09	Test Date:	07/20/07	Checked By:	jdt
Depth :	30-32 ft	Test Id:	113133		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20069	OL-0317-09	30-32 ft	Moist, brown silt	2.62

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:49:49 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20070	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-10	Test Date:	07/13/07	Checked By:	n/a
Depth :	28-30 ft	Sample Id:	53068		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20070	OL-0317-10	28-30 ft	Moist, brown silt	29.8

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 10:14:35 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20070	Sample Type: tube	Tested By:	md
Sample ID: OL-0317-10	Test Date: 07/13/07	Checked By:	jdt
Depth : 28-30 ft	Test Id: 113100		
Test Comment: ---			
Sample Description: Moist, brown silt			
Sample Comment: ---			

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-2007	)L-0317-1	28-30 ft	Moist, brown silt	2.87	6.20	107	29.8	83.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:14:43 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20070	Sample Type: tube	Tested By:	ap
Sample ID: OL-0317-10	Test Date: 07/18/07	Checked By:	jdt
Depth : 28-30 ft	Test Id: 113134		
Test Comment: ---			
Sample Description: Moist, brown silt			
Sample Comment: ---			

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20070	OL-0317-10	28-30 ft	Moist, brown silt	2.71

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:50:22 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	mll
Sample ID:OL-0317-12	Test Date: 08/10/07	Checked By:	n/a
Depth : 0-2 ft	Sample Id: 53070		
Test Comment: ---			
Sample Description: Moist, gray sand with silt			
Sample Comment: ---			

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20034	OL-0317-12	0-2 ft	Moist, gray sand with silt	56.6

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 6:51:44 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-12	Test Date:	07/18/07	Checked By:	jdt
Depth :	0-2 ft	Test Id:	113151		
Test Comment:	---				
Sample Description:	Moist, gray sand with silt				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-SB-20034	OL-0317-12	0-2 ft	Moist, gray sand with silt	46	87.2	12.8

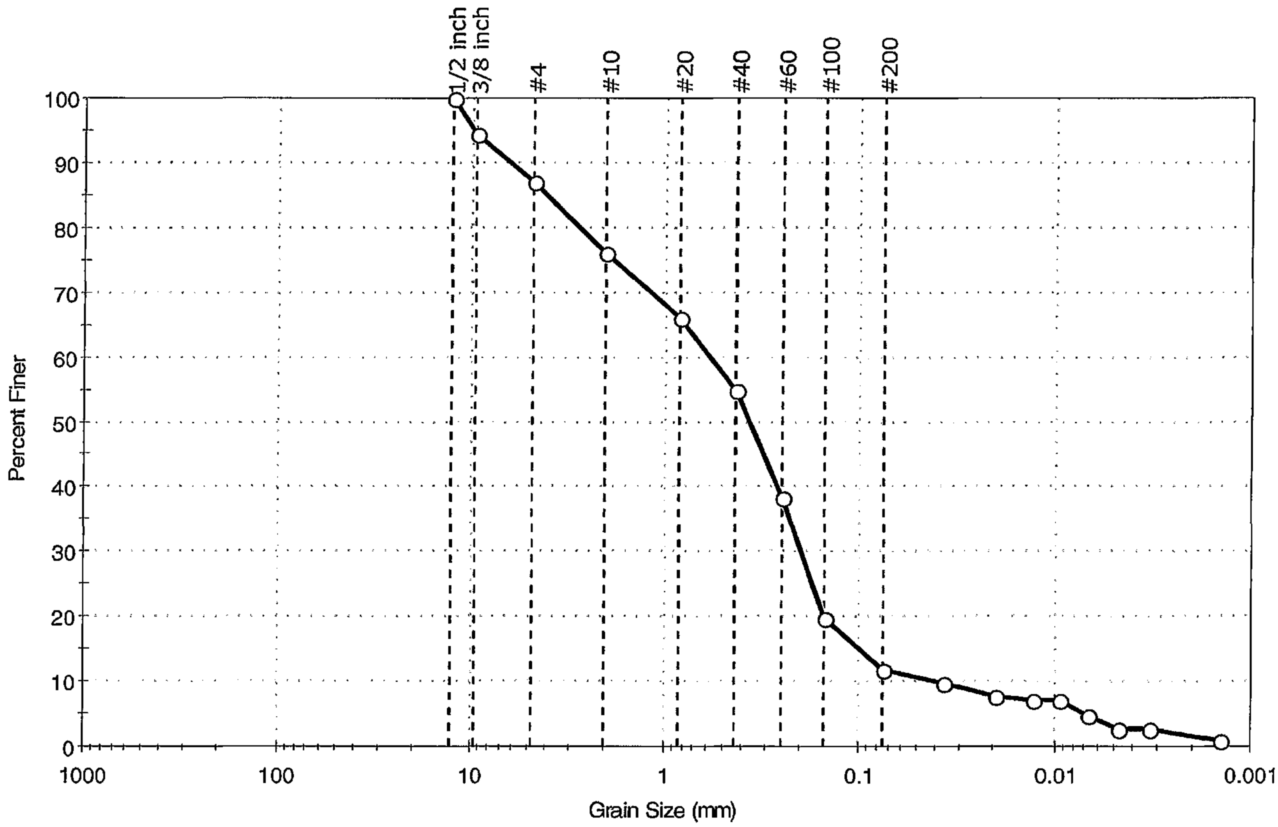
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	mll
Sample ID: OL-0317-12	Test Date: 07/18/07	Checked By:	jdt
Depth : 0-2 ft	Test Id: 113158		

Test Comment: ---
Sample Description: Moist, gray sand with silt
Sample Comment: ---

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	12.9	75.3	11.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1/2 inch	12.70	100		
3/8 inch	9.50	94		
#4	4.75	87		
#10	2.00	76		
#20	0.84	66		
#40	0.42	55		
#60	0.25	38		
#100	0.15	20		
#200	0.075	12		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0367	10		
---	0.0196	8		
---	0.0129	7		
---	0.0095	7		
---	0.0067	5		
---	0.0047	3		
---	0.0033	3		
---	0.0014	1		

Coefficients

D_{85} =4.0223 mm D_{30} =0.1979 mm
D_{60} =0.5788 mm D_{15} =0.0983 mm
D_{50} =0.3635 mm D_{10} =0.0405 mm
C_u =14.291 C_c =1.671

Classification

ASTM Well-graded sand with silt (SW-SM)

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED
Sand/Gravel Hardness : HARD

printed 8/10/2007 6:50:56 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-12	Test Date:	07/17/07	Checked By:	jdt
Depth :	0-2 ft	Test Id:	113086		
Test Comment:	---				
Sample Description:	Moist, gray sand with silt				
Sample Comment:	---				

Atterberg Limits - ASTM D 4318-05

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	OL-0317-12	.-SB-200]	0-2 ft	57	n/a	n/a	n/a	n/a	Well-graded sand with silt (SW-SM)

45% Retained on #40 Sieve

Dry Strength: NONE

Dilentancy: RAPID

Toughness: n/a

The sample was determined to be Non-Plastic

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	ap
Sample ID: OL-0317-12	Test Date: 07/18/07	Checked By:	jdt
Depth : 0-2 ft	Test Id: 113135		
Test Comment: ---			
Sample Description: Moist, gray sand with silt			
Sample Comment: ---			

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20034	OL-0317-12	0-2 ft	Moist, gray sand with silt	2.5

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:51:35 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-12	Test Date:	08/10/07	Checked By:	jdt
Depth :	0-2 ft	Test Id:	113101		
Test Comment:	---				
Sample Description:	Moist, gray sand with silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-200:	)L-0317-1	0-2 ft	Moist, gray sand with silt	2.87	5.76	85.0	56.6	54.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:51:54 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	mll
Sample ID: OL-0317-14	Test Date: 08/10/07	Checked By:	n/a
Depth : 6-8 ft	Sample Id: 53072		
Test Comment: ---			
Sample Description: Wet, gray silt with sand			
Sample Comment: ---			

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20034	OL-0317-14	6-8 ft	Wet, gray silt with sand	56.6

Notes: Temperature of Drying : 110° Celsius

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	mll
Sample ID: OL-0317-14	Test Date: 07/19/07	Checked By:	jdt
Depth : 6-8 ft	Test Id: 113152		
Test Comment: ---			
Sample Description: Wet, gray silt with sand			
Sample Comment: ---			

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-SB-20034	OL-0317-14	6-8 ft	Wet, gray silt with sand	57	81.6	18.4

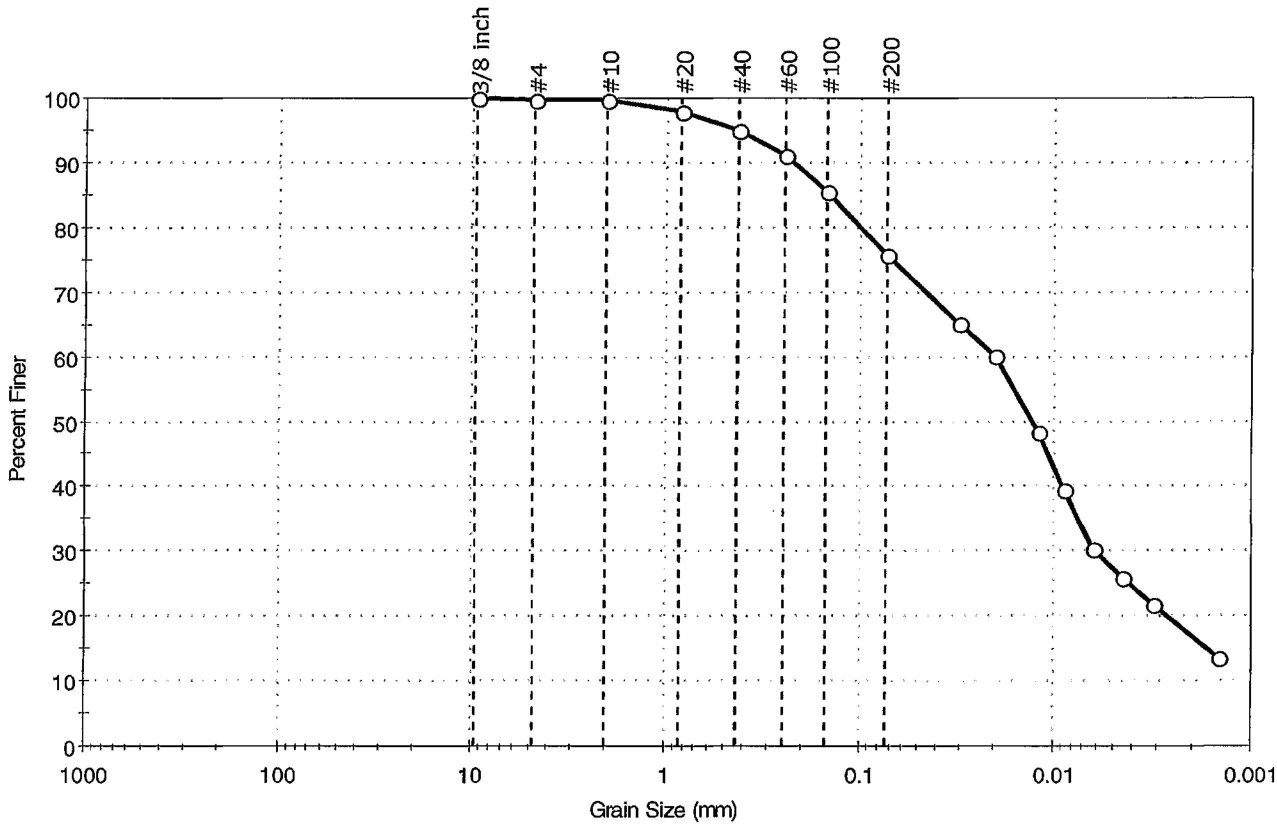
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 6:54:26 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	mll
Sample ID: OL-0317-14	Test Date: 07/18/07	Checked By:	jdt
Depth : 6-8 ft	Test Id: 113159		
Test Comment: ---			
Sample Description: Wet, gray silt with sand			
Sample Comment: ---			

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.3	23.8	75.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8 inch	9.50	100		
#4	4.75	100		
#10	2.00	100		
#20	0.84	98		
#40	0.42	95		
#60	0.25	91		
#100	0.15	86		
#200	0.074	76		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0309	65		
---	0.0204	60		
---	0.0121	48		
---	0.0088	39		
---	0.0063	30		
---	0.0045	26		
---	0.0032	22		
---	0.0014	14		

Coefficients

D_{85} =0.1429 mm D_{30} =0.0062 mm
D_{60} =0.0203 mm D_{15} =0.0016 mm
D_{50} =0.0130 mm D_{10} =0.0010 mm
C_u =N/A C_c =N/A

Classification

ASTM silt with sand (ML)

AASHTO Clayey Soils (A-7-6 (12))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

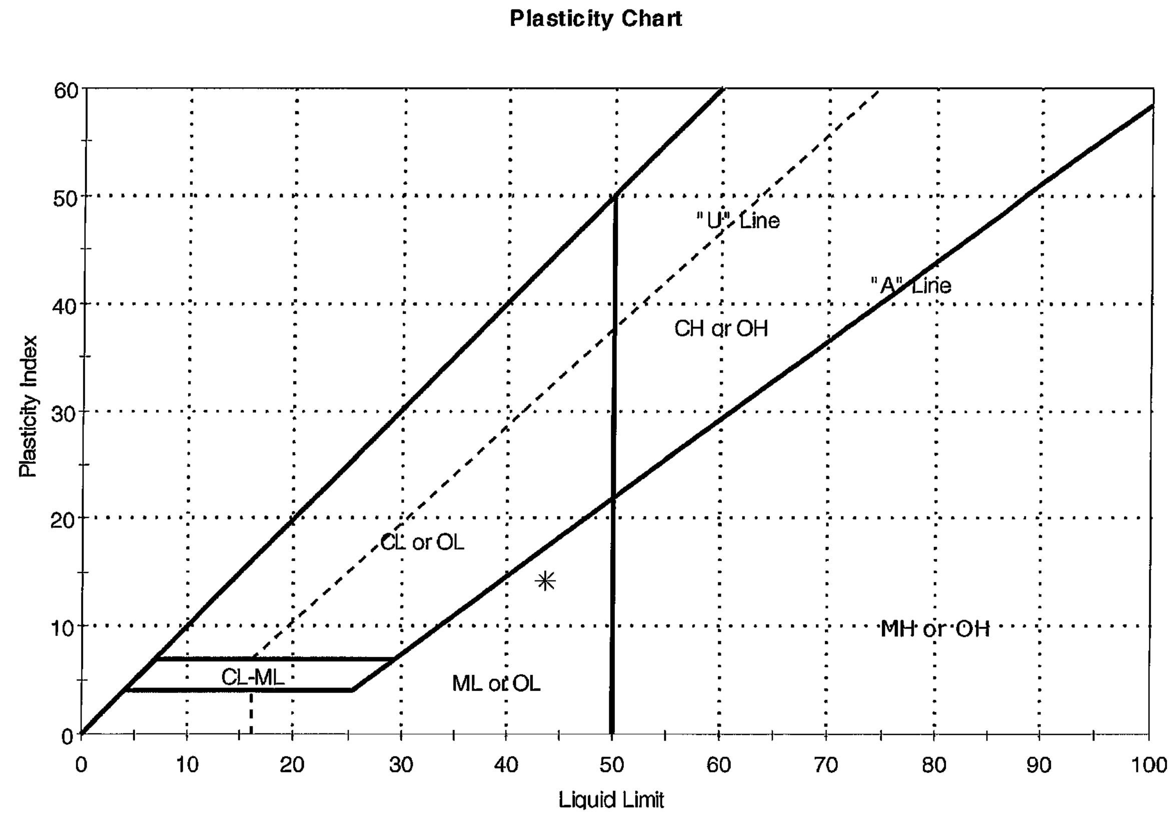
Sand/Gravel Hardness : HARD

printed 8/10/2007 6:53:37 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-14	Test Date:	07/18/07	Checked By:	jdt
Depth :	6-8 ft	Test Id:	113087		
Test Comment:	---				
Sample Description:	Wet, gray silt with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	OL-0317-14	.-SB-200:	6-8 ft	57	44	29	15	2	silt with sand (ML)

Sample Prepared using the WET method
5% Retained on #40 Sieve
Dry Strength: HIGH
Dilentancy: SLOW
Toughness: LOW

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-14	Test Date:	07/18/07	Checked By:	jdt
Depth :	6-8 ft	Test Id:	113137		
Test Comment:	---				
Sample Description:	Wet, gray silt with sand				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20034	OL-0317-14	6-8 ft	Wet, gray silt with sand	2.65

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	md
Sample ID:OL-0317-14	Test Date: 08/10/07	Checked By:	jdt
Depth : 6-8 ft	Test Id: 113103		
Test Comment: ---			
Sample Description: Wet, gray silt with sand			
Sample Comment: ---			

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-200:	)L-0317-1	6-8 ft	Wet, gray silt with sand	2.00	4.00	106	56.6	68.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:54:16 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	mll
Sample ID:OL-0317-15	Test Date: 08/10/07	Checked By:	n/a
Depth : 42-44 ft	Sample Id: 53073		
Test Comment: ---			
Sample Description: Moist, brown clay			
Sample Comment: ---			

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20034	OL-0317-15	42-44 ft	Moist, brown clay	40.8

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 6:55:25 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	mll
Sample ID: OL-0317-15	Test Date: 07/18/07	Checked By:	jdt
Depth : 42-44 ft	Test Id: 113153		
Test Comment: ---			
Sample Description: Moist, brown clay			
Sample Comment: ---			

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-SB-20034	OL-0317-15	42-44 ft	Moist, brown clay	22	85.9	14.1

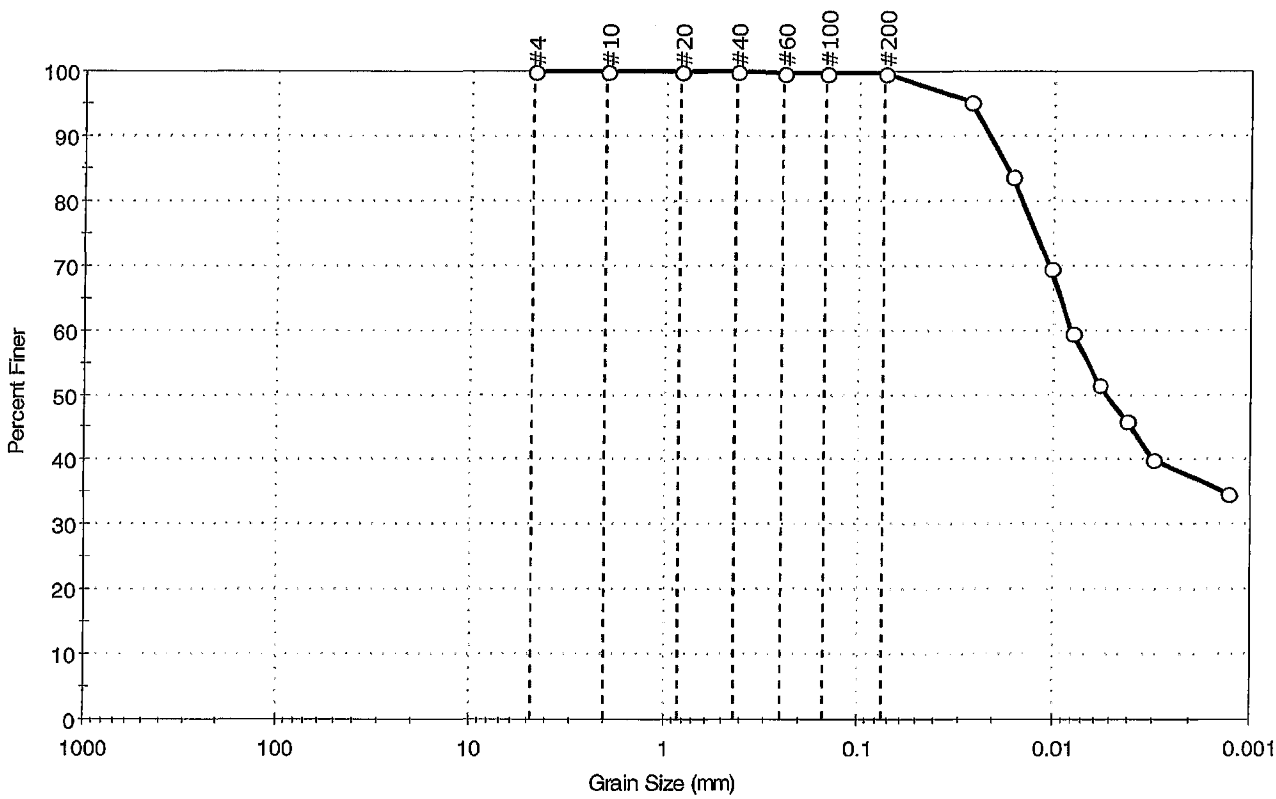
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 6:55:53 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-15	Test Date:	07/18/07	Checked By:	jdt
Depth :	42-44 ft	Test Id:	113160		
Test Comment:	---				
Sample Description:	Moist, brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	0.4	99.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.075	100		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0269	95		
---	0.0163	84		
---	0.0104	70		
---	0.0079	60		
---	0.0058	52		
---	0.0041	46		
---	0.0030	40		
---	0.0013	35		

Coefficients

D_{85} =0.0172 mm	D_{30} =N/A
D_{60} =0.0080 mm	D_{15} =N/A
D_{50} =0.0052 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM lean clay (CL)

AASHTO Clayey Soils (A-6 (24))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

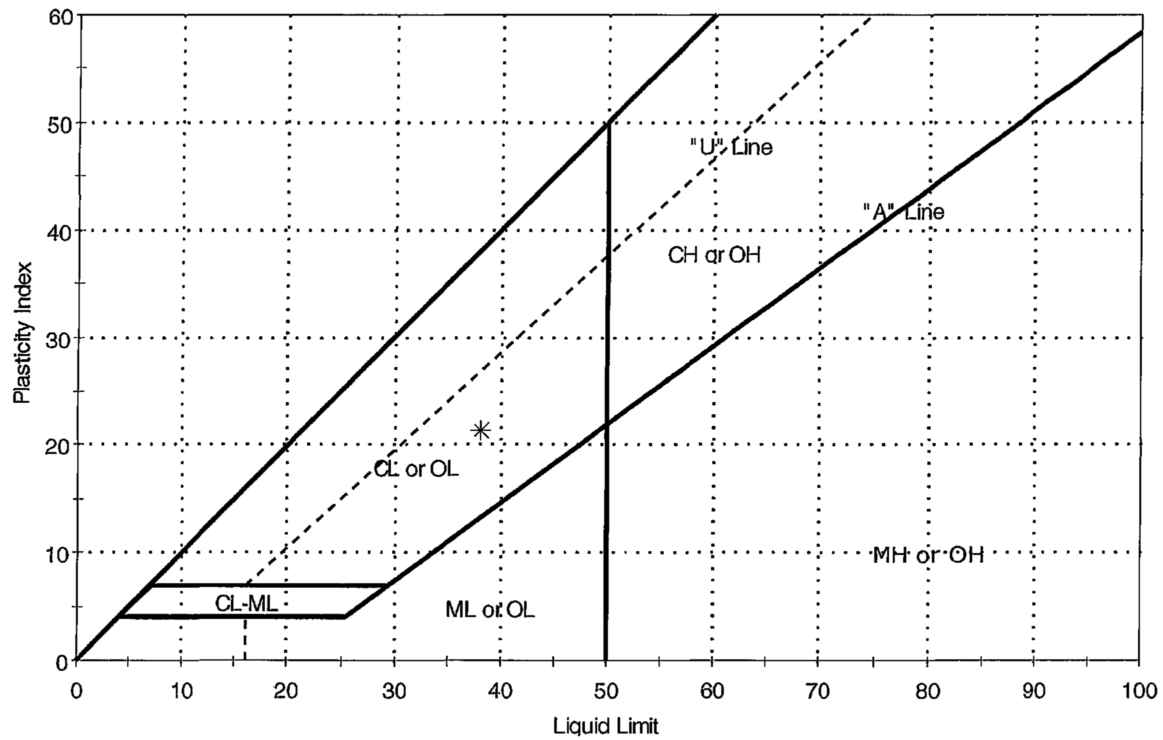
printed 8/10/2007 6:55:15 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20034	Sample Type: tube	Tested By:	ap
Sample ID:OL-0317-15	Test Date: 07/27/07	Checked By:	jdt
Depth : 42-44 ft	Test Id: 113088		
Test Comment: ---			
Sample Description: Moist, brown clay			
Sample Comment: ---			

Atterberg Limits - ASTM D 4318-05

Plasticity Chart



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0317-15	-SB-200	42-44 ft	41	38	17	21	1	lean clay (CL)

Sample Prepared using the WET method

0% Retained on #40 Sieve

Dry Strength: HIGH

Dilentancy: SLOW

Toughness: LOW

printed 8/10/2007 6:55:34 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-15	Test Date:	07/20/07	Checked By:	jdt
Depth :	42-44 ft	Test Id:	113138		
Test Comment:	---				
Sample Description:	Moist, brown clay				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20034	OL-0317-15	42-44 ft	Moist, brown clay	2.74

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:21:53 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-15	Test Date:	08/10/07	Checked By:	jdt
Depth :	42-44 ft	Test Id:	113104		
Test Comment:	---				
Sample Description:	Moist, brown clay				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-2003	)L-0317-1	42-44 ft	Moist, brown clay	2.87	6.00	114	40.8	81.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:56:28 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-17	Test Date:	08/10/07	Checked By:	n/a
Depth :	19-21 ft	Sample Id:	53075		
Test Comment:	---				
Sample Description:	Moist, dark greenish gray silt with sand				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20036	OL-0317-17	19-21 ft	Moist, dark greenish gray silt with sand	67.2

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 6:57:19 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20036	Sample Type: tube	Tested By:	mll
Sample ID: OL-0317-17	Test Date: 07/25/07	Checked By:	jdt
Depth : 19-21 ft	Test Id: 113154		
Test Comment: ---			
Sample Description: Moist, dark greenish gray silt with sand			
Sample Comment: ---			

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-SB-20036	OL-0317-17	19-21 ft	Moist, dark greenish gray silt with sand	59	92.3	7.7

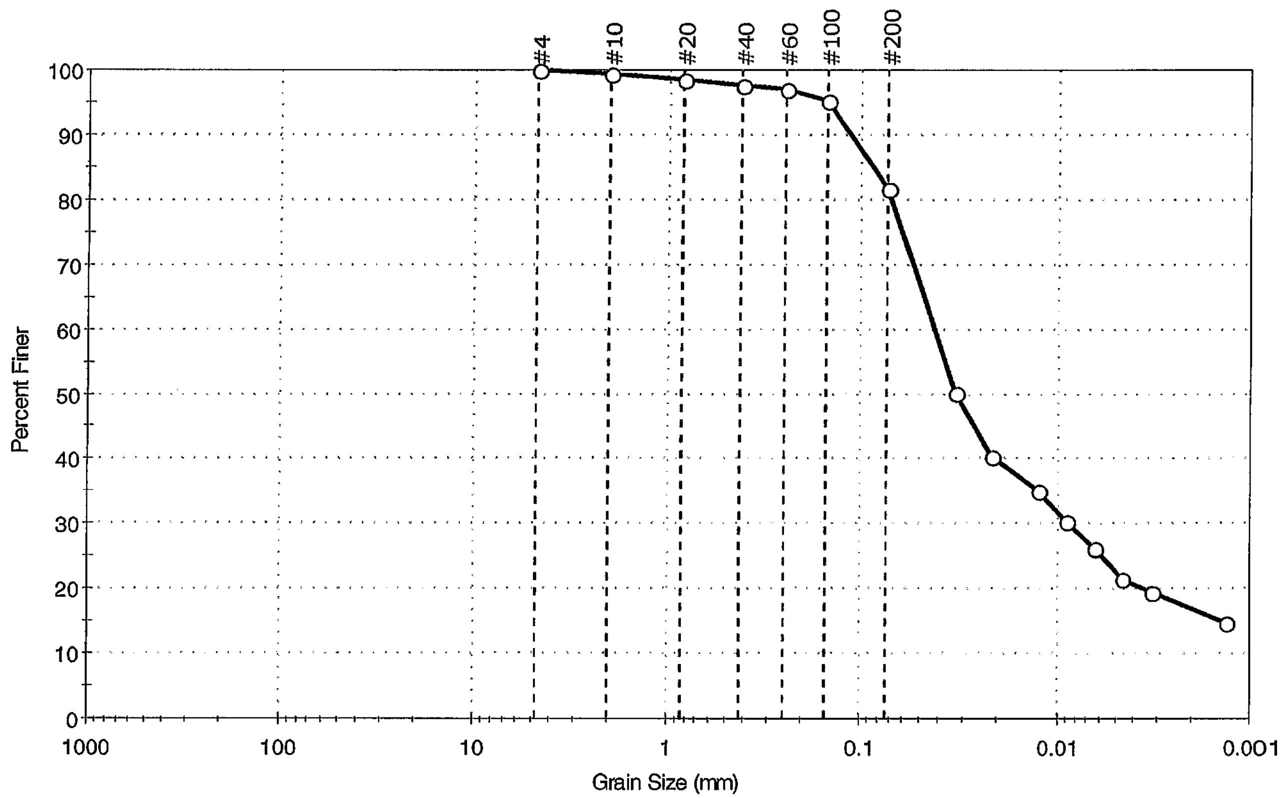
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass;
dried to a constant mass at temperature of 110º C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440º C

printed 8/10/2007 6:57:29 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-17	Test Date:	07/23/07	Checked By:	jdt
Depth :	19-21 ft	Test Id:	113161		
Test Comment:	---				
Sample Description:	Moist, dark greenish gray silt with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	18.1	81.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	98		
#40	0.42	98		
#60	0.25	97		
#100	0.15	95		
#200	0.074	82		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0335	50		
---	0.0218	40		
---	0.0126	35		
---	0.0090	30		
---	0.0064	26		
---	0.0046	21		
---	0.0032	19		
---	0.0013	15		

Coefficients

D_{85} =0.0872 mm D_{30} =0.0087 mm
D_{60} =0.0429 mm D_{15} =0.0014 mm
D_{50} =0.0333 mm D_{10} =0.0006 mm
C_u =N/A C_c =N/A

Classification

ASTM   elastic silt with sand (MH)

AASHTO   Clayey Soils (A-7-5 (35))

Sample/Test Description

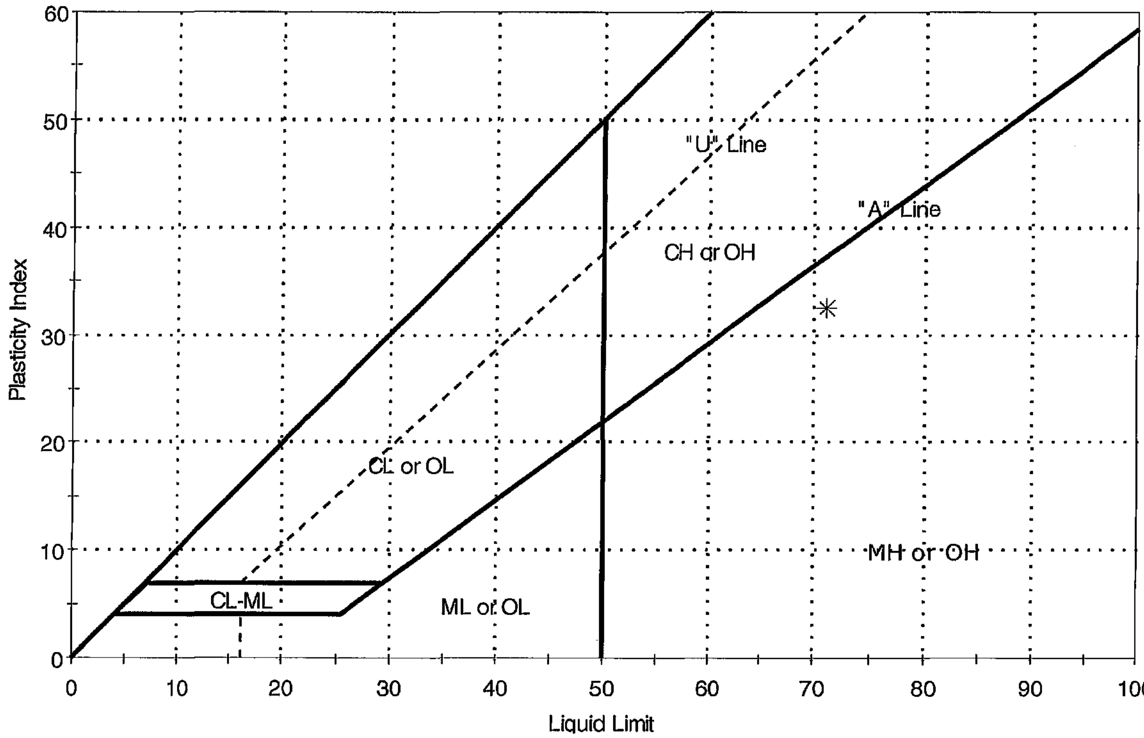
Sand/Gravel Particle Shape : ROUNDED
Sand/Gravel Hardness : HARD

printed 8/10/2007 6:57:12 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20036	Sample Type: tube	Tested By:	ap
Sample ID:OL-0317-17	Test Date: 07/30/07	Checked By:	jdt
Depth : 19-21 ft	Test Id: 113089		
Test Comment: ---			
Sample Description: Moist, dark greenish gray silt with sand			
Sample Comment: ---			

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0317-17	-SB-200	19-21 ft	67	71	39	32	1	elastic silt with sand (MH)

Sample Prepared using the WET method
2% Retained on #40 Sieve
Dry Strength: HIGH
Dilentancy: SLOW
Toughness: LOW

printed 8/10/2007 6:57:42 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20036	Sample Type: tube	Tested By:	ap
Sample ID: OL-0317-17	Test Date: 07/24/07	Checked By:	jdt
Depth : 19-21 ft	Test Id: 113140		
Test Comment: ---			
Sample Description: Moist, dark greenish gray silt with sand			
Sample Comment: ---			

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20036	OL-0317-17	19-21 ft	Moist, dark greenish gray silt with sand	2.61

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 6:57:55 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20036	Sample Type: tube	Tested By:	md
Sample ID: OL-0317-17	Test Date: 08/10/07	Checked By:	jdt
Depth : 19-21 ft	Test Id: 113106		
Test Comment: ---			
Sample Description: Moist, dark greenish gray silt with sand			
Sample Comment: ---			

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-200:	)L-0317-1	19-21 ft	Moist, dark greenish gray silt with sand	2.87	5.80	95.0	67.2	57.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:26:13 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-18	Test Date:	08/10/07	Checked By:	n/a
Depth :	37-39 ft	Sample Id:	53076		
Test Comment:	---				
Sample Description:	Moist, very dark gray clay				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20036	OL-0317-18	37-39 ft	Moist, very dark gray clay	28.2

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 7:09:00 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-18	Test Date:	07/26/07	Checked By:	jdt
Depth :	37-39 ft	Test Id:	113155		
Test Comment:	---				
Sample Description:	Moist, very dark gray clay				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-SB-20036	OL-0317-18	37-39 ft	Moist, very dark gray clay	22	95.6	4.4

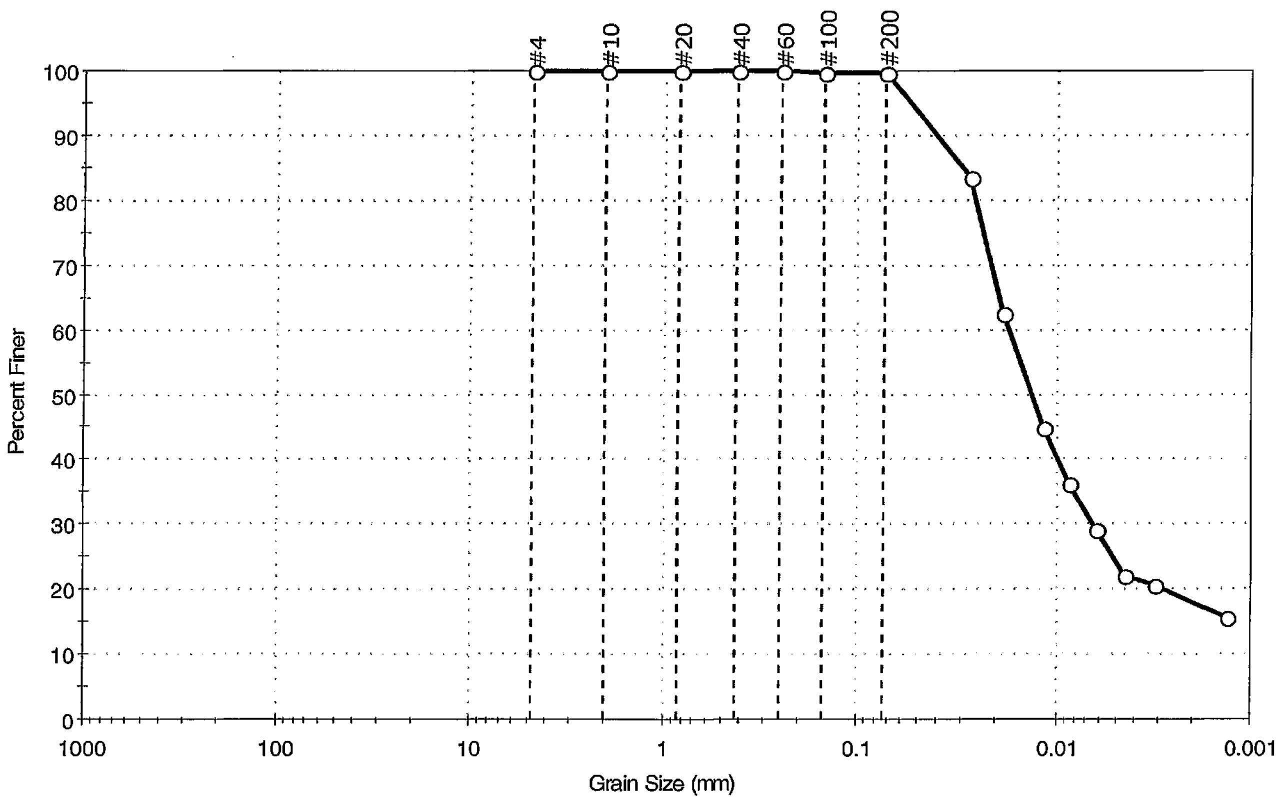
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 7:09:08 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-18	Test Date:	07/23/07	Checked By:	jdt
Depth :	37-39 ft	Test Id:	113162		
Test Comment:	---				
Sample Description:	Moist, very dark gray clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	0.4	99.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.074	100		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0274	83		
---	0.0188	63		
---	0.0117	45		
---	0.0085	36		
---	0.0062	29		
---	0.0045	22		
---	0.0032	21		
---	0.0013	16		

Coefficients

D_{85} =0.0303 mm D_{30} =0.0064 mm
D_{60} =0.0176 mm D_{15} =N/A
D_{50} =0.0135 mm D_{10} =N/A
C_u =N/A C_c =N/A

Classification

ASTM lean clay (CL)

AASHTO Silty Soils (A-4 (8))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

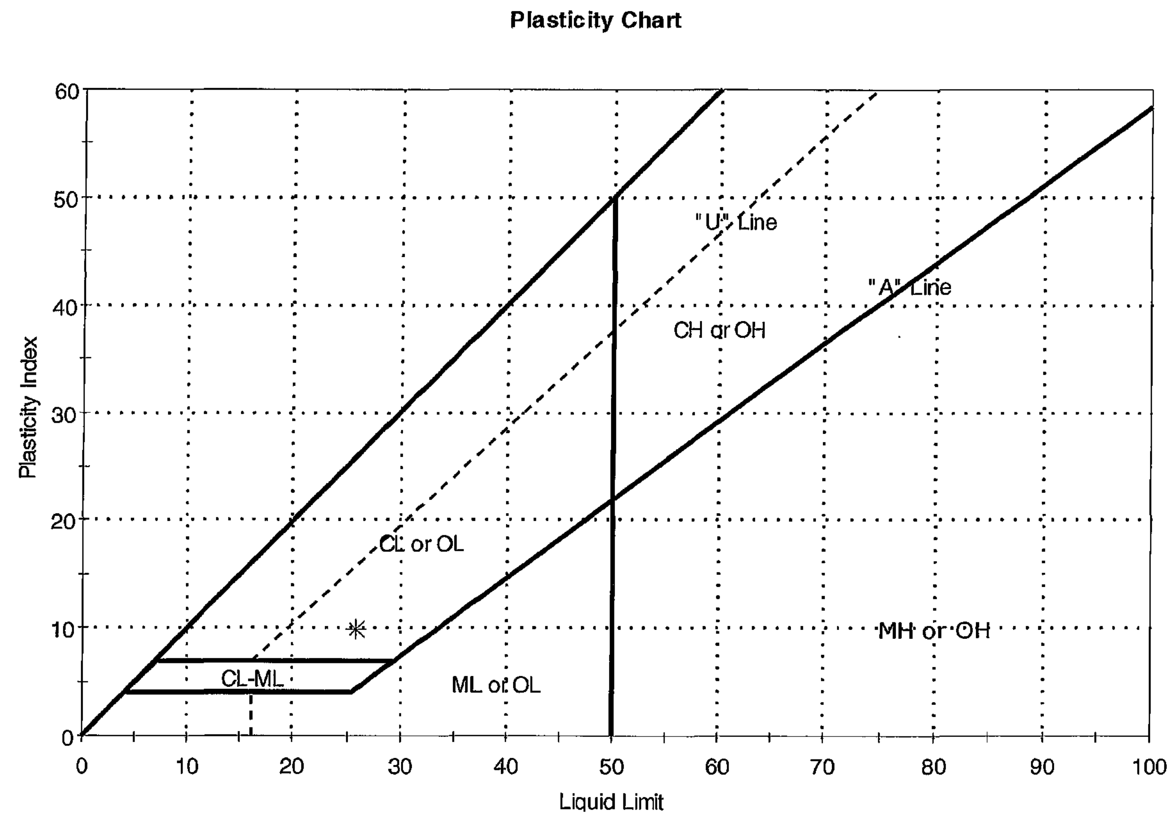
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:08:51 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science			
Project:	Onondaga			
Location:	Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20036		Sample Type: tube	Tested By:	ap
Sample ID:OL-0317-18		Test Date: 07/23/07	Checked By:	jdt
Depth : 37-39 ft		Test Id: 113090		
Test Comment:	---			
Sample Description:	Moist, very dark gray clay			
Sample Comment:	---			

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0317-18	-SB-200	37-39 ft	28	26	16	10	1	lean clay (CL)

Sample Prepared using the WET method

0% Retained on #40 Sieve

Dry Strength: HIGH

Dilentancy: SLOW

Toughness: LOW

printed 8/10/2007 7:09:18 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20036	Sample Type: tube	Tested By:	ap
Sample ID: OL-0317-18	Test Date: 07/24/07	Checked By:	jdt
Depth : 37-39 ft	Test Id: 113141		
Test Comment: ---			
Sample Description: Moist, very dark gray clay			
Sample Comment: ---			

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20036	OL-0317-18	37-39 ft	Moist, very dark gray clay	2.75

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:09:28 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20036	Sample Type: tube	Tested By:	md
Sample ID:OL-0317-18	Test Date: 08/10/07	Checked By:	jdt
Depth : 37-39 ft	Test Id: 113107		
Test Comment: ---			
Sample Description: Moist, very dark gray clay			
Sample Comment: ---			

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-200:	)L-0317-1	37-39 ft	Moist, very dark gray clay	2.87	6.01	113	28.2	88.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:10:11 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-19	Test Date:	08/10/07	Checked By:	n/a
Depth :	6-8 ft	Sample Id:	53077		
Test Comment:	---				
Sample Description:	Wet, black silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20036	OL-0317-19	6-8 ft	Wet, black silt	96.7

Notes: Temperature of Drying : 110º Celsius

printed 8/10/2007 7:10:50 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-19	Test Date:	07/19/07	Checked By:	jdt
Depth :	6-8 ft	Test Id:	113156		
Test Comment:	---				
Sample Description:	Wet, black silt				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-SB-20036	OL-0317-19	6-8 ft	Wet, black silt	87	83.1	16.9

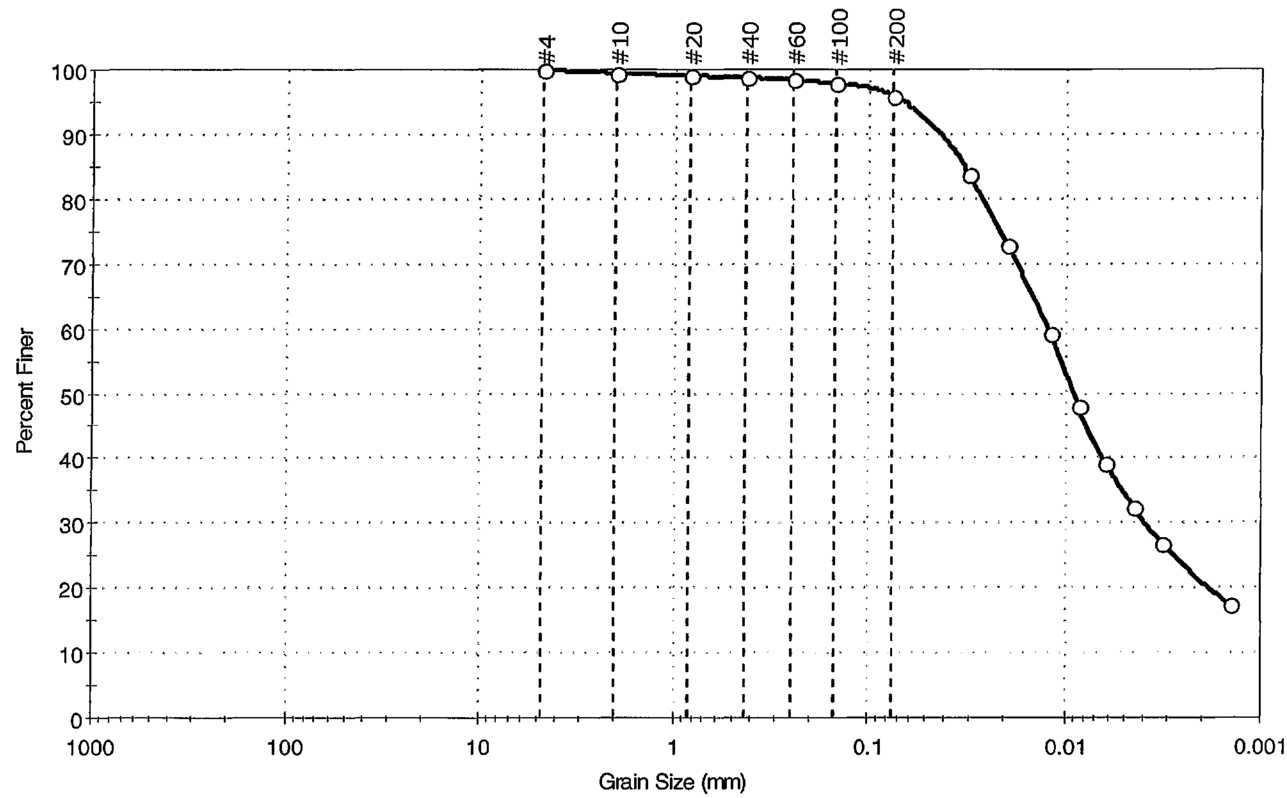
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 7:10:59 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20036	Sample Type: tube	Tested By:	mll
Sample ID:OL-0317-19	Test Date: 07/18/07	Checked By:	jdt
Depth : 6-8 ft	Test Id: 113163		
Test Comment: ---			
Sample Description: Wet, black silt			
Sample Comment: ---			

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	4.0	96.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.84	99		
#40	0.42	99		
#60	0.25	98		
#100	0.15	98		
#200	0.075	96		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0311	84		
---	0.0200	73		
---	0.0119	59		
---	0.0087	48		
---	0.0062	39		
---	0.0045	32		
---	0.0032	27		
---	0.0014	17		

Coefficients

D_{85} =0.0336 mm　D_{30} =0.0039 mm
D_{60} =0.0123 mm　D_{15} =N/A
D_{50} =0.0091 mm　D_{10} =N/A
C_u =N/A　C_c =N/A

Classification

ASTM　elastic silt (MH)

AASHTO　Clayey Soils (A-7-5 (47))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

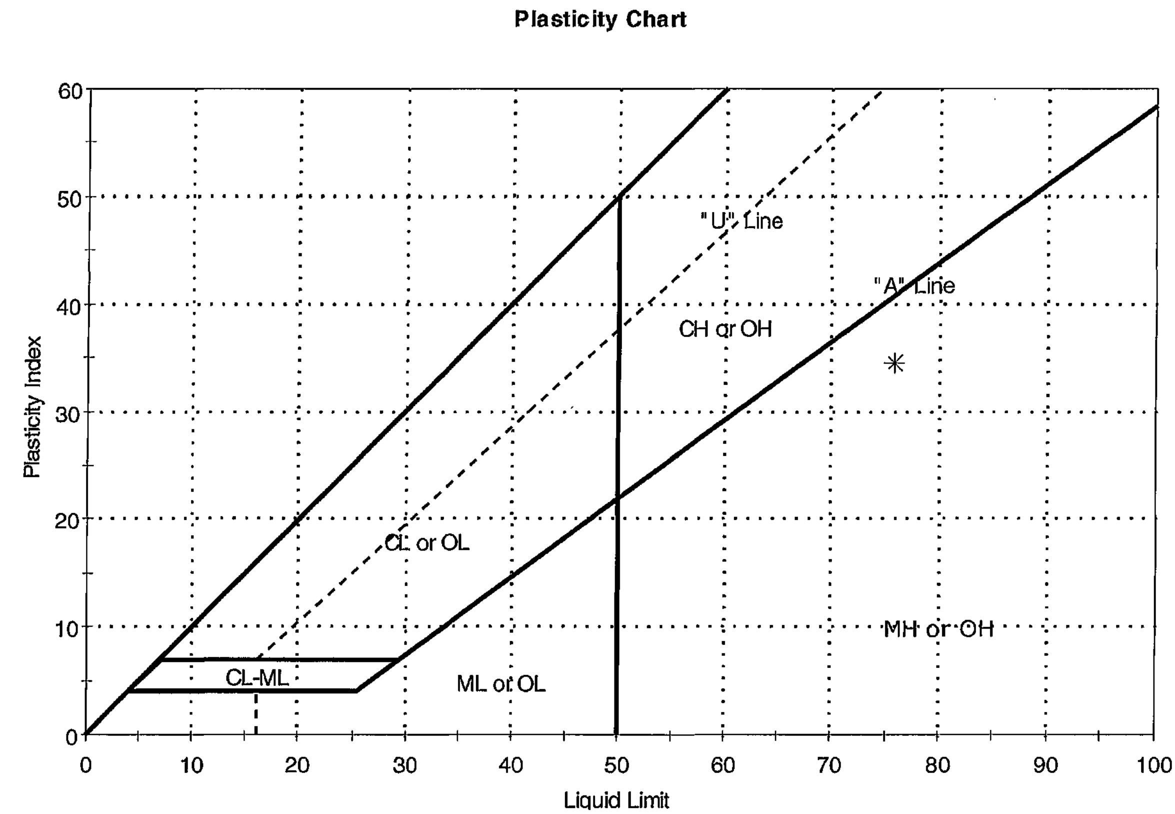
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:10:41 AM

GeoTesting
express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID: OL-SB-20036		Sample Type:	tube	Tested By:	ap
Sample ID:OL-0317-19		Test Date:	07/30/07	Checked By:	jdt
Depth : 6-8 ft		Test Id:	113091		
Test Comment:	---				
Sample Description:	Wet, black silt				
Sample Comment:	---				

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0317-19	.-SB-200:	6-8 ft	97	76	41	35	2	elastic silt (MH)

Sample Prepared using the WET method

1% Retained on #40 Sieve

Dry Strength: HIGH

Dilentancy: SLOW

Toughness: LOW

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-19	Test Date:	07/20/07	Checked By:	jdt
Depth :	6-8 ft	Test Id:	113142		
Test Comment:	---				
Sample Description:	Wet, black silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20036	OL-0317-19	6-8 ft	Wet, black silt	2.34

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:11:16 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20036	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-19	Test Date:	08/10/07	Checked By:	jdt
Depth :	6-8 ft	Test Id:	113108		
Test Comment:	---				
Sample Description:	Wet, black silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-200:	)L-0317-1'	6-8 ft	Wet, black silt	2.87	6.01	85.0	96.7	43.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:11:59 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10121	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-02	Test Date:	07/13/07	Checked By:	n/a
Depth :	40-42 ft	Sample Id:	53060		

Test Comment: ---
Sample Description: Moist, brown silt
Sample Comment: ---

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-10121	OL-0317-02	40-42 ft	Wet, brown silt	24.4

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 9:51:16 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10121	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-02	Test Date:	06/29/07	Checked By:	jdt
Depth :	40-42 ft	Test Id:	113128		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-10121	OL-0317-02	40-42 ft	Moist, brown silt	2.73

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 9:51:24 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10121	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-02	Test Date:	07/13/07	Checked By:	jdt
Depth :	40-42 ft	Test Id:	113094		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-1012	)L-0317-0	40-42 ft	Moist, brown silt	2.87	6.00	118	28.4	92.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10124	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-03	Test Date:	07/13/07	Checked By:	n/a
Depth :	42-44 ft	Sample Id:	53061		
Test Comment:	---				
Sample Description:	Wet, grayish brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-10124	OL-0317-03	42-44 ft	Wet, grayish brown silt	50.1

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 9:58:52 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-10124	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-03	Test Date:	07/13/07	Checked By:	jdt
Depth :	42-44 ft	Test Id:	113095		
Test Comment:	---				
Sample Description:	Wet, grayish brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-101:	)L-0317-0	42-44 ft	Wet, grayish brown silt	2.87	6.00	109	50.1	72.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 9:58:57 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20056	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-04	Test Date:	07/13/07	Checked By:	n/a
Depth :	41-43 ft	Sample Id:	53062		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20056	OL-0317-04	41-43 ft	Moist, brown silt	39.2

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 10:02:11 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20056	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-04	Test Date:	07/13/07	Checked By:	jdt
Depth :	41-43 ft	Test Id:	113096		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
.-STA-200	)L-0317-0	41-43 ft	Moist, brown silt	2.87	6.01	110	39.2	79.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:02:17 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20067	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-06	Test Date:	07/13/07	Checked By:	n/a
Depth :	46-48 ft	Sample Id:	53064		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20067	OL-0317-06	46-48 ft	Moist, brown silt	29.2

Notes: Temperature of Drying : 110º Celsius

printed 7/13/2007 10:06:38 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20067	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-06	Test Date:	07/13/07	Checked By:	jdt
Depth :	46-48 ft	Test Id:	113097		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-2006	)L-0317-0	46-48 ft	Moist, brown silt	2.87	6.20	115	29.2	89.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:07:02 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20068	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-07	Test Date:	07/13/07	Checked By:	n/a
Depth :	38-40 ft	Sample Id:	53065		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20068	OL-0317-07	38-40 ft	Moist, brown silt	34.9

Notes: Temperature of Drying : 110° Celsius

printed 7/13/2007 10:09:15 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20068	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-07	Test Date:	07/13/07	Checked By:	jdt
Depth :	38-40 ft	Test Id:	113098		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-200(	)L-0317-0	38-40 ft	Moist, brown silt	2.87	6.05	113	34.9	84.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:09:23 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20069	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-09	Test Date:	07/13/07	Checked By:	n/a
Depth :	30-32 ft	Sample Id:	53067		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20069	OL-0317-09	30-32 ft	Moist, brown silt	28.8

Notes: Temperature of Drying : 110º Celsius

printed 7/13/2007 10:12:28 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science		
Project:	Onondaga		
Location:	Syracuse	Project No:	GTX-7143
Boring ID: OL-SB-20069	Sample Type: tube	Tested By:	md
Sample ID:OL-0317-09	Test Date: 07/13/07	Checked By:	jdt
Depth : 30-32 ft	Test Id: 113099		
Test Comment:	---		
Sample Description:	Moist, brown silt		
Sample Comment:	---		

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-2006	)L-0317-0	30-32 ft	Moist, brown silt	2.87	6.22	109	28.8	84.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:12:37 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20070	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-10	Test Date:	07/13/07	Checked By:	n/a
Depth :	28-30 ft	Sample Id:	53068		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20070	OL-0317-10	28-30 ft	Moist, brown silt	29.8

Notes: Temperature of Drying : 110º Celsius

printed 7/13/2007 10:14:35 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20070	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-10	Test Date:	07/13/07	Checked By:	jdt
Depth :	28-30 ft	Test Id:	113100		
Test Comment:	---				
Sample Description:	Moist, brown silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-2007	)L-0317-1	28-30 ft	Moist, brown silt	2.87	6.20	107	29.8	83.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:14:43 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0317-12	Test Date:	07/13/07	Checked By:	n/a
Depth :	0-2 ft	Sample Id:	53070		
Test Comment:	---				
Sample Description:	Moist, gray silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20034	OL-0317-12	0-2 ft	Moist, gray silt	29.8

Notes: Temperature of Drying : 110º Celsius

printed 7/13/2007 10:27:48 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20034	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0317-12	Test Date:	07/13/07	Checked By:	jdt
Depth :	0-2 ft	Test Id:	113101		
Test Comment:	---				
Sample Description:	Moist, gray silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
L-SB-2003	)L-0317-1	0-2 ft	Moist, gray silt	2.87	5.76	85.0	29.8	66.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 7/13/2007 10:28:18 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20038	Sample Type: tube	Tested By:	jbr
Sample ID:OL-0317-20	Test Date: 08/24/07	Checked By:	n/a
Depth : 4-6 ft	Sample Id: 53078		
Test Comment: ---			
Sample Description: Moist, light gray silt			
Sample Comment: ---			

Moisture Content of Soil - ASTM D 2216

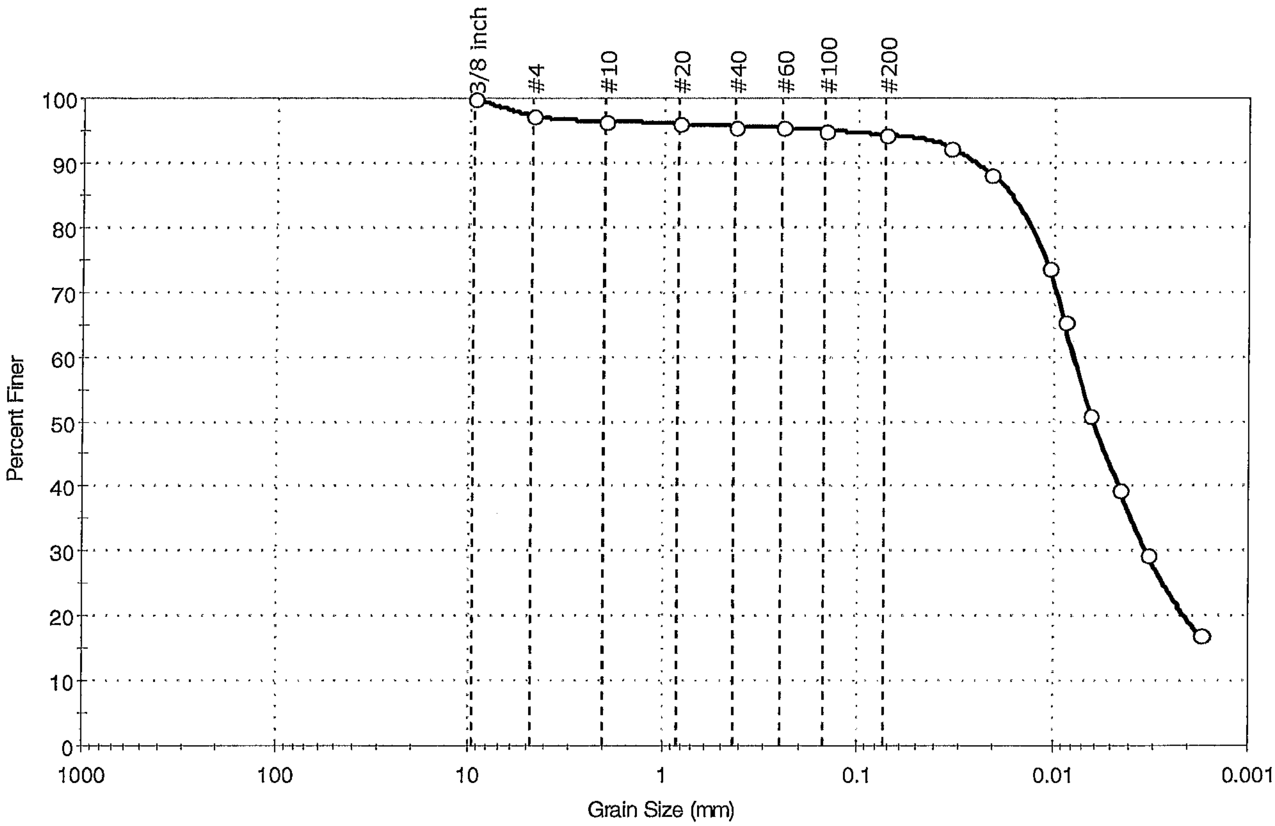
Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-SB-20038	OL-0317-20	4-6 ft	Moist, light gray silt	209

Notes: Temperature of Drying : 110º Celsius

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20038	Sample Type: tube	Tested By:	jbr
Sample ID:OL-0317-20	Test Date: 08/14/07	Checked By:	njh
Depth : 4-6 ft	Test Id: 117674		
Test Comment: ---			
Sample Description: Moist, light gray silt			
Sample Comment: ---			

Particle Size Analysis - ASTM D 422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	2.7	2.9	94.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8 inch	9.51	100		
#4	4.75	97		
#10	2.00	97		
#20	0.84	96		
#40	0.42	96		
#60	0.25	95		
#100	0.15	95		
#200	0.074	94		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0339	92		
---	0.0212	88		
---	0.0107	74		
---	0.0088	66		
---	0.0064	51		
---	0.0045	39		
---	0.0032	29		
---	0.0017	17		

Coefficients

D_{85} =0.0181 mm D_{30} =0.0033 mm
D_{60} =0.0078 mm D_{15} =N/A
D_{50} =0.0061 mm D_{10} =N/A
C_u =N/A C_c =N/A

Classification

ASTM elastic silt (MH)

AASHTO Clayey Soils (A-7-5 (72))

Sample/Test Description

Sand/Gravel Particle Shape : ---

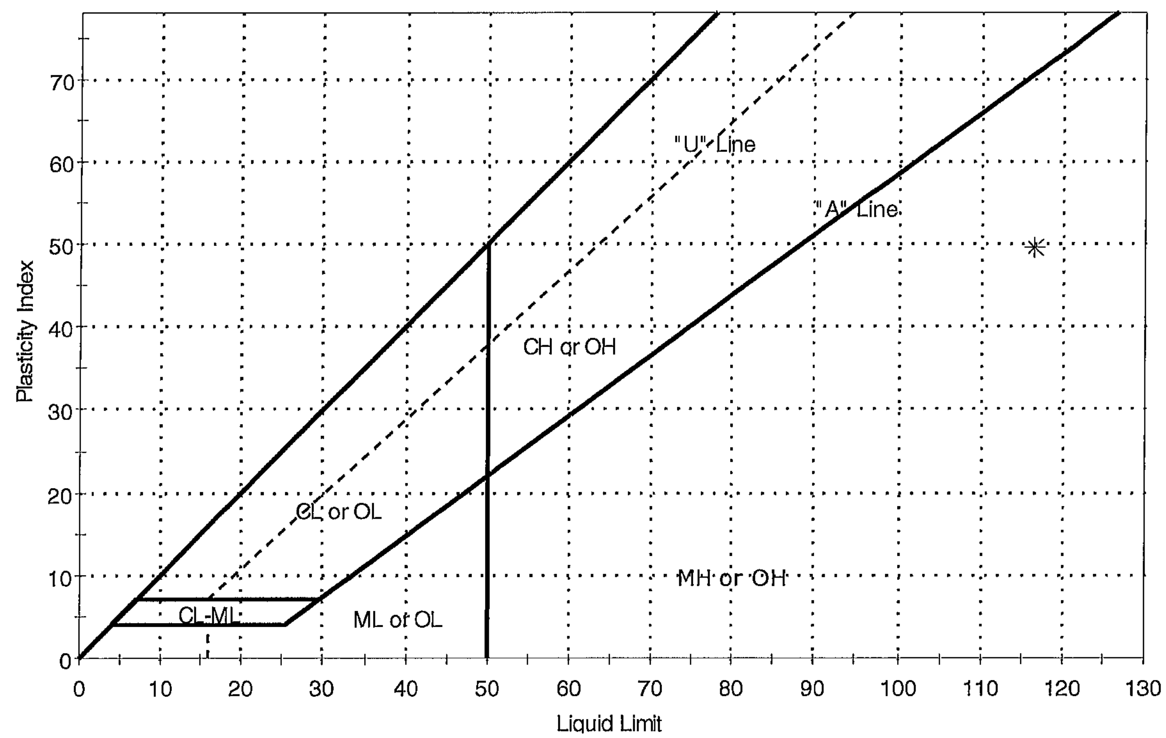
Sand/Gravel Hardness : ---

printed 8/24/2007 12:51:40 PM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20038	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0317-20	Test Date:	08/13/07	Checked By:	njh
Depth :	4-6 ft	Test Id:	117672		
Test Comment:	---				
Sample Description:	Moist, light gray silt				
Sample Comment:	---				

Atterberg Limits - ASTM D 4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0317-20	-SB-200	4-6 ft	209	116	67	49	3	elastic silt (MH)

Sample Prepared using the WET method

4% Retained on #40 Sieve

Dry Strength: HIGH

Dilentancy: SLOW

Toughness: LOW

printed 8/24/2007 12:51:58 PM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-SB-20038	Sample Type:	tube	Tested By:	jbr
Sample ID:	OL-0317-20	Test Date:	08/14/07	Checked By:	njh
Depth :	4-6 ft	Test Id:	117675		
Test Comment:	---				
Sample Description:	Moist, light gray silt				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-SB-20038	OL-0317-20	4-6 ft	Moist, light gray silt	43	43.9	56.1

Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110º C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440º C

printed 8/24/2007 12:52:16 PM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-SB-20038	Sample Type: tube	Tested By:	ap
Sample ID: OL-0317-20	Test Date: 08/17/07	Checked By:	njh
Depth : 4-6 ft	Test Id: 117676		
Test Comment: ---			
Sample Description: Moist, light gray silt			
Sample Comment: ---			

Specific Gravity of Soils by ASTM D 854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-SB-20038	OL-0317-20	4-6 ft	Moist, light gray silt	2.52

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/24/2007 12:52:32 PM

GeoTesting express
a subsidiary of Geocomp Corporation

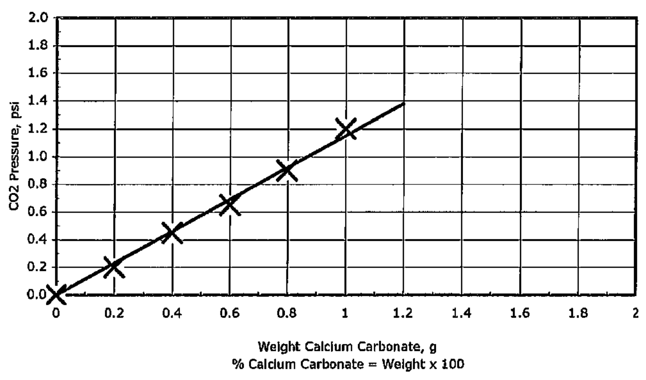
Client:	Parsons Engineering Science
Project Name:	Onondaga
Project Location:	Syracuse, NY
GTX #:	7143
Report Date:	08/10/07
Tested By:	jbr
Checked By:	jdt

Calcium Carbonate Content of Soils by ASTM D 4373

Boring ID	Sample ID	Depth, ft	*CO_2 Pressure, psi	Weight $CaCO_3$, grams	Calcium Carbonate Content, %
OL-STA-20038	OL-0318-01	6-8	0.20	0.17	17
OL-STA-20038	OL-0318-02	28-30	0.00	0.00	0
OL-STA-20038	OL-0318-05	40-42	0.10	0.09	9
OL-STA-20052	OL-0318-06	4-6	0.30	0.26	26
OL-STA-20052	OL-0318-09	24-26	0.55	0.48	48
OL-STA-20052	OL-0318-10	30-32	0.05	0.04	4
OL-STA-20054	OL-0318-13	4-6	0.25	0.22	22
OL-STA-20054	OL-0318-14	20-22	0.10	0.09	9
OL-STA-20054	OL-0318-15	26-28	0.10	0.09	9

Notes: Calcium Carbonate content precise to +/- 1.5%
*CO_2 Pressure is based on a 1 gram specimen.
The reported Calcium Carbonate Content (%) is based on one gram

Figure 1: Calibration Curve



GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20038	Sample Type: tube	Tested By:	mll
Sample ID:OL-0318-01	Test Date: 08/10/07	Checked By:	n/a
Depth : 6-8 ft	Sample Id: 53079		
Test Comment: ---			
Sample Description: Wet, white silt			
Sample Comment: ----			

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20038	OL-0318-01	6-8 ft	Wet, white silt	193.4

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 7:35:59 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20038	Sample Type: tube	Tested By:	mll
Sample ID:OL-0318-01	Test Date: 07/18/07	Checked By:	jdt
Depth : 6-8 ft	Test Id: 113214		
Test Comment: ---			
Sample Description: Wet, white silt			
Sample Comment: ----			

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-STA-2003{	OL-0318-01	6-8 ft	Wet, white silt	57	47.5	52.5

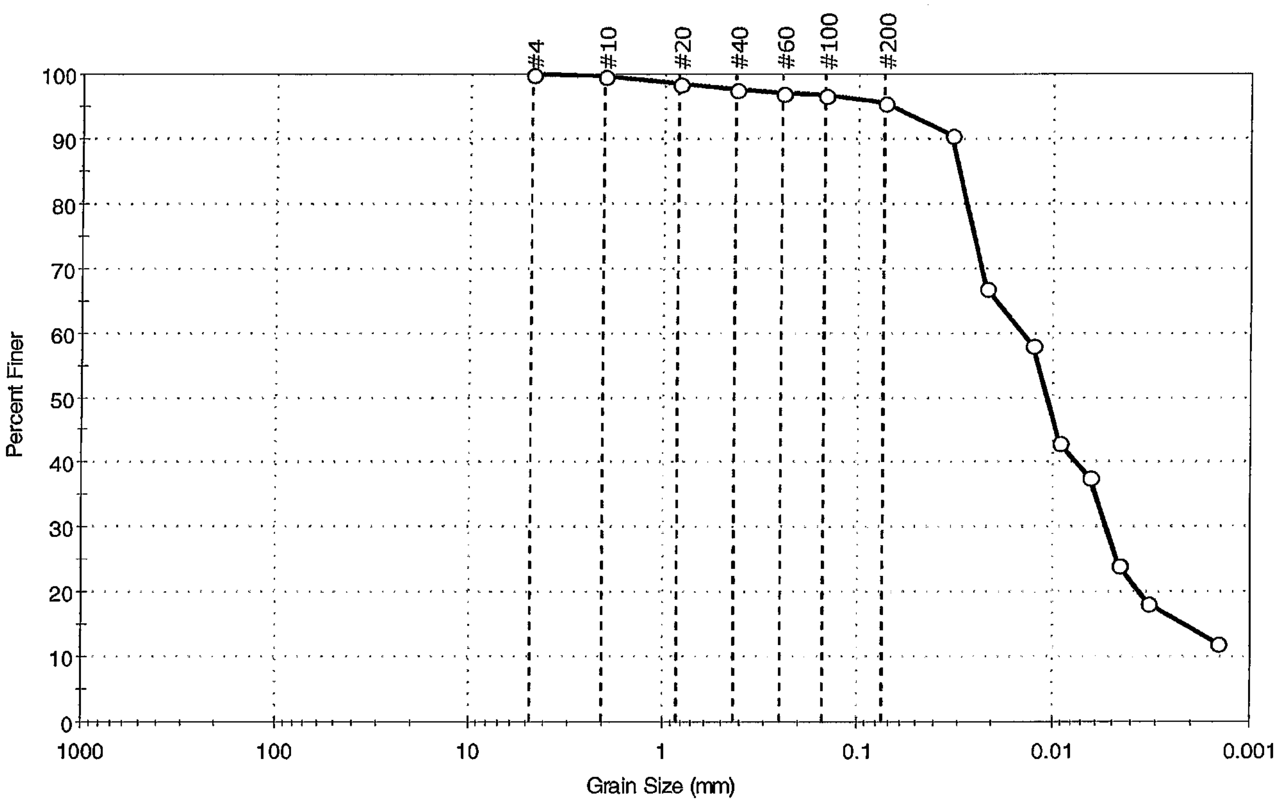
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 7:36:09 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20038	Sample Type: tube	Tested By:	mll
Sample ID: OL-0318-01	Test Date: 07/18/07	Checked By:	jdt
Depth : 6-8 ft	Test Id: 113241		
Test Comment: ---			
Sample Description: Wet, white silt			
Sample Comment: ----			

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	4.3	95.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	99		
#40	0.42	98		
#60	0.25	97		
#100	0.15	97		
#200	0.075	96		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0338	91		
---	0.0218	67		
---	0.0126	58		
---	0.0091	43		
---	0.0064	38		
---	0.0046	24		
---	0.0033	18		
---	0.0015	12		

Coefficients

D_{85} =0.0304 mm D_{30} =0.0053 mm
D_{60} =0.0141 mm D_{15} =0.0021 mm
D_{50} =0.0106 mm D_{10} =0.0011 mm
C_u =N/A C_c =N/A

Classification

ASTM elastic silt (MH)

AASHTO Clayey Soils (A-7-5 (75))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

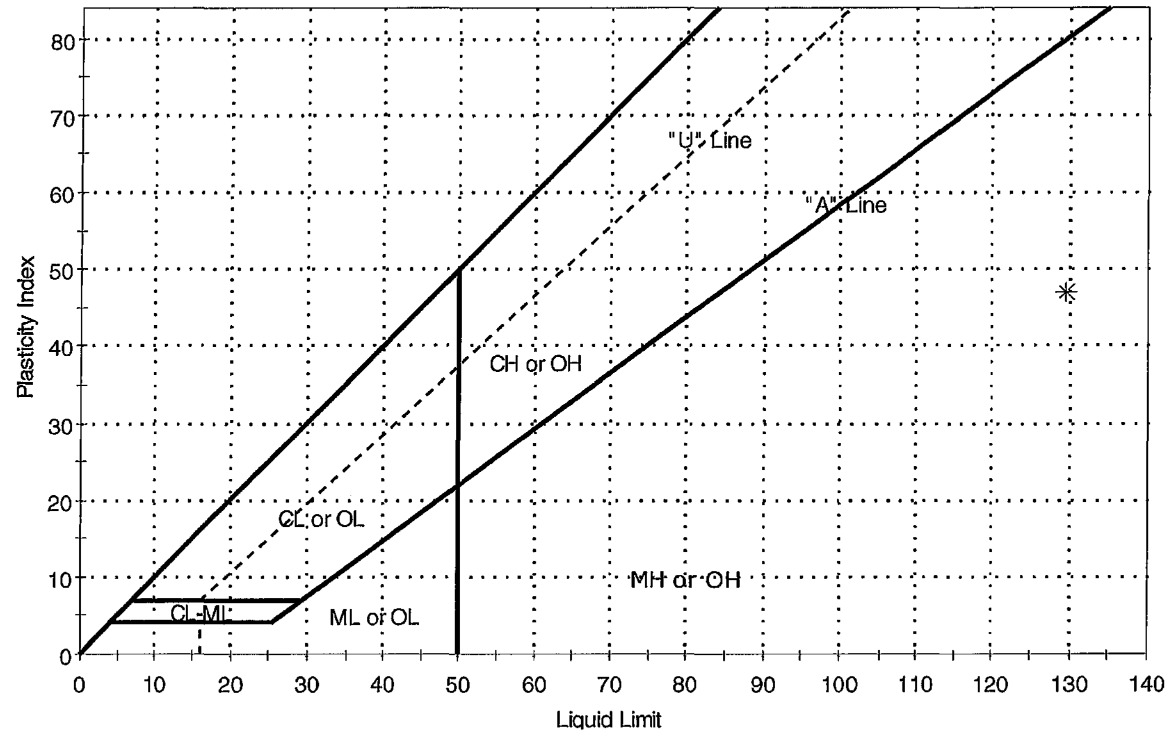
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:36:23 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20038	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-01	Test Date:	07/19/07	Checked By:	jdt
Depth :	6-8 ft	Test Id:	113187		
Test Comment:	---				
Sample Description:	Wet, white silt				
Sample Comment:	----				

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0318-01	-STA-200	6-8 ft	193	130	83	47	2	elastic silt (MH)

Sample Prepared using the WET method
2% Retained on #40 Sieve
Dry Strength: HIGH
Dilentancy: SLOW
Toughness: LOW

printed 8/10/2007 7:36:33 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20038	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-01	Test Date:	07/20/07	Checked By:	jdt
Depth :	6-8 ft	Test Id:	113232		
Test Comment:	---				
Sample Description:	Wet, white silt				
Sample Comment:	----				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20038	OL-0318-01	6-8 ft	Wet, white silt	2.54

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:36:42 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20038	Sample Type: tube	Tested By:	md
Sample ID:OL-0318-01	Test Date: 08/10/07	Checked By:	jdt
Depth : 6-8 ft	Test Id: 113196		
Test Comment: ---			
Sample Description: Wet, white silt			
Sample Comment: ----			

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
.-STA-200	)L-0318-0	6-8 ft	Wet, white silt	2.87	6.00	76.0	193.4	26.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:37:08 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20038	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-02	Test Date:	08/10/07	Checked By:	n/a
Depth :	28-30 ft	Sample Id:	53080		
Test Comment:	---				
Sample Description:	Moist, grayish brown clay				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20038	OL-0318-02	28-30 ft	Moist, grayish brown clay	52.3

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 7:38:31 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20038	Sample Type: tube	Tested By:	mll
Sample ID: OL-0318-02	Test Date: 07/23/07	Checked By:	jdt
Depth : 28-30 ft	Test Id: 113215		
Test Comment: ---			
Sample Description: Moist, grayish brown clay			
Sample Comment: ---			

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
)L-STA-2003{	OL-0318-02	28-30 ft	Moist, grayish brown clay	30	85.5	14.5

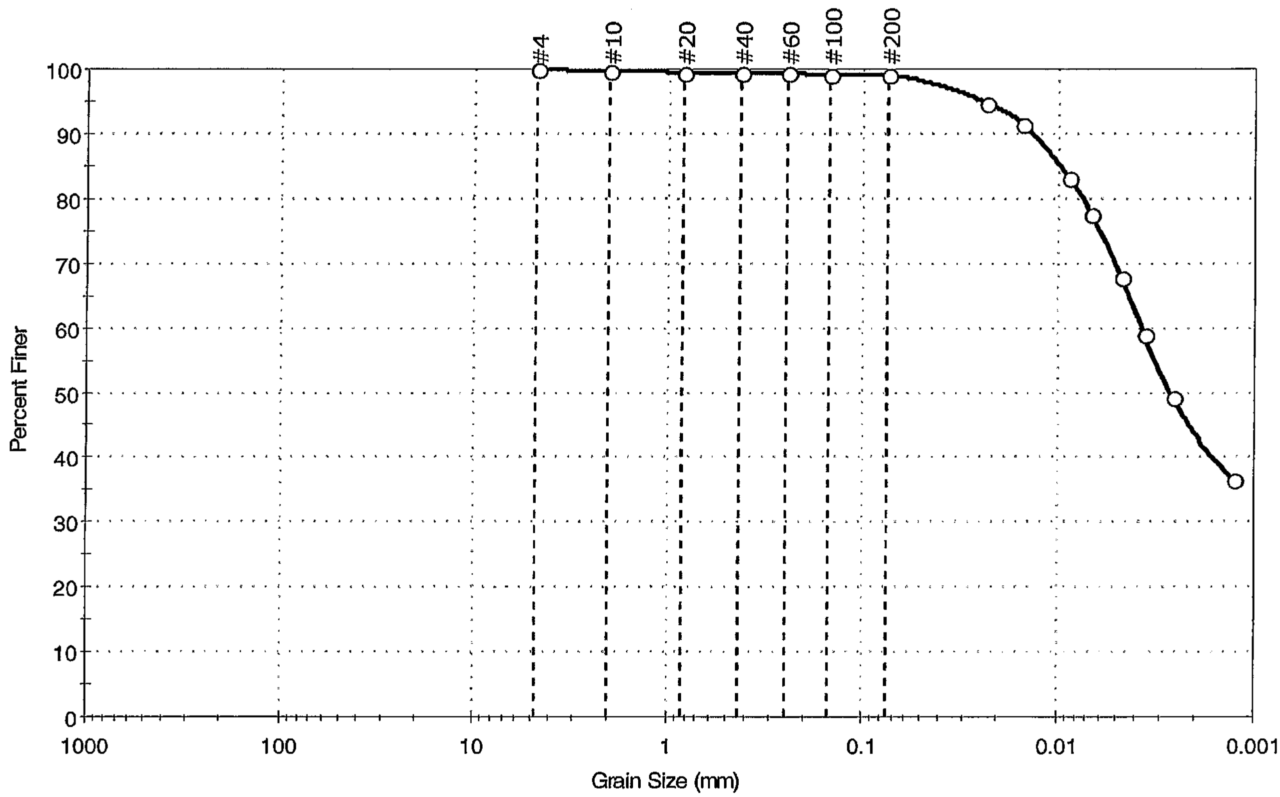
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass;
dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 7:38:40 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20038	Sample Type: tube	Tested By:	mll
Sample ID: OL-0318-02	Test Date: 07/25/07	Checked By:	jdt
Depth : 28-30 ft	Test Id: 113242		
Test Comment: ---			
Sample Description: Moist, grayish brown clay			
Sample Comment: ---			

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	1.0	99.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	99		
#60	0.25	99		
#100	0.15	99		
#200	0.075	99		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0233	95		
---	0.0151	92		
---	0.0089	83		
---	0.0067	78		
---	0.0048	68		
---	0.0037	59		
---	0.0026	49		
---	0.0013	37		

Coefficients

D_{85} =0.0099 mm D_{30} =N/A

D_{60} =0.0038 mm D_{15} =N/A

D_{50} =0.0027 mm D_{10} =N/A

C_u =N/A C_c =N/A

Classification

ASTM fat clay (CH)

AASHTO Clayey Soils (A-7-6 (38))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

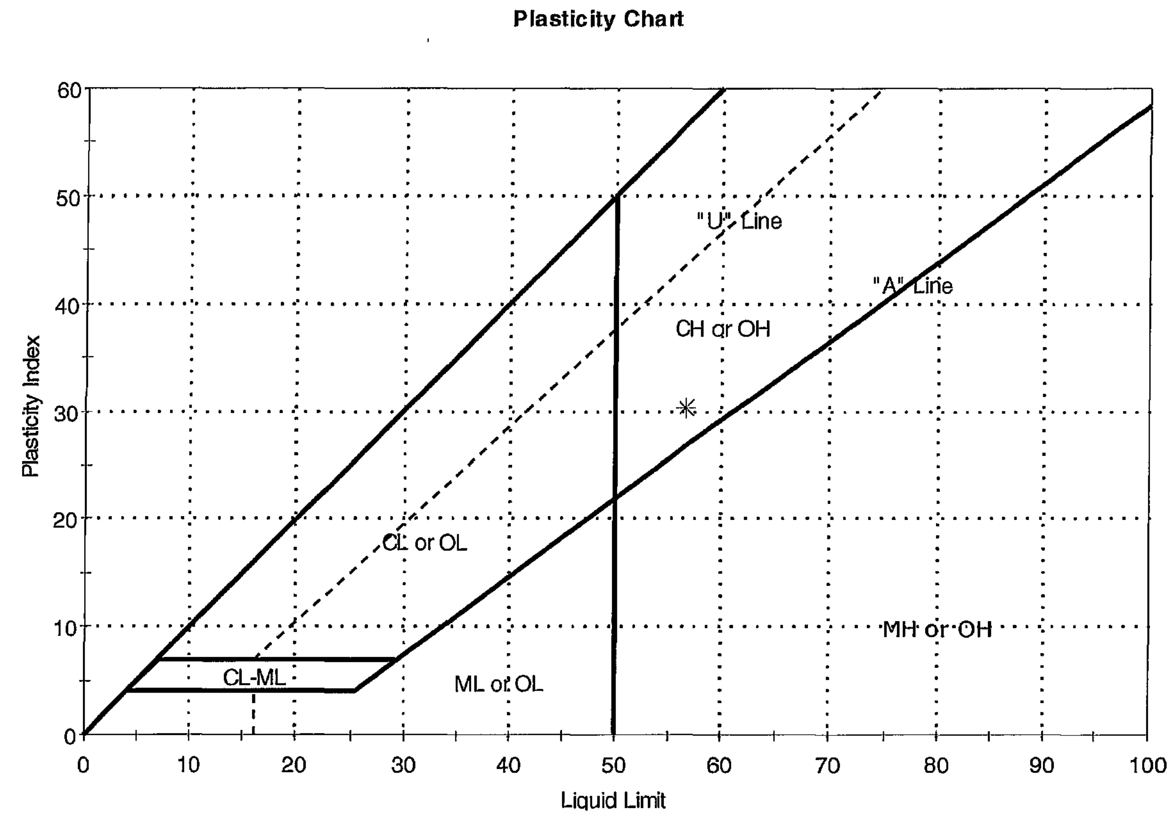
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:38:20 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20038	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-02	Test Date:	07/27/07	Checked By:	jdt
Depth :	28-30 ft	Test Id:	113188		
Test Comment:	---				
Sample Description:	Moist, grayish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0318-02	-STA-200	28-30 ft	52	57	26	31	1	fat clay (CH)

Sample Prepared using the WET method
1% Retained on #40 Sieve
Dry Strength: HIGH
Dilentancy: SLOW
Toughness: LOW

printed 8/10/2007 7:39:00 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20038	Sample Type: tube	Tested By:	ap
Sample ID:OL-0318-02	Test Date: 07/26/07	Checked By:	jdt
Depth : 28-30 ft	Test Id: 113233		
Test Comment: ---			
Sample Description: Moist, grayish brown clay			
Sample Comment: ---			

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20038	OL-0318-02	28-30 ft	Moist, grayish brown clay	2.78

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:39:11 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20038	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-05	Test Date:	08/10/07	Checked By:	n/a
Depth :	40-42 ft	Sample Id:	53083		
Test Comment:	---				
Sample Description:	Moist, dark reddish gray clay				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20038	OL-0318-05	40-42 ft	Moist, dark reddish gray clay	39.6

Notes: Temperature of Drying : 110º Celsius

printed 8/10/2007 7:39:54 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20038	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-05	Test Date:	07/25/07	Checked By:	jdt
Depth :	40-42 ft	Test Id:	113216		
Test Comment:	---				
Sample Description:	Moist, dark reddish gray clay				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
)L-STA-2003(	OL-0318-05	40-42 ft	Moist, dark reddish gray clay	19	85.	15.

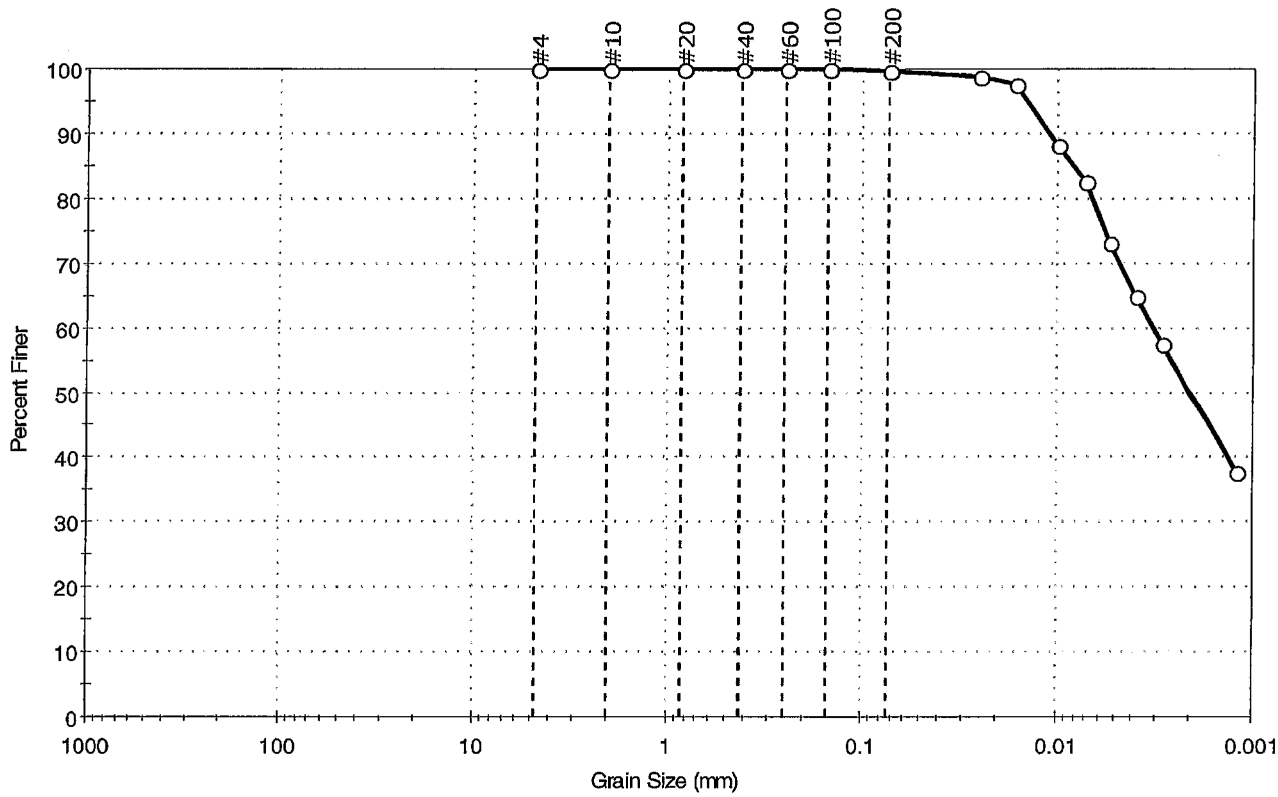
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 7:40:05 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20038	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-05	Test Date:	07/23/07	Checked By:	jdt
Depth :	40-42 ft	Test Id:	113243		
Test Comment:	---				
Sample Description:	Moist, dark reddish gray clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	0.2	99.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.074	100		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0251	99		
---	0.0162	98		
---	0.0098	88		
---	0.0071	83		
---	0.0053	73		
---	0.0038	65		
---	0.0028	58		
---	0.0012	38		

Coefficients

D_{85} =0.0081 mm　　D_{30} =N/A
D_{60} =0.0031 mm　　D_{15} =N/A
D_{50} =0.0020 mm　　D_{10} =N/A
C_u =N/A　　C_c =N/A

Classification

ASTM　lean clay (CL)

AASHTO　Clayey Soils (A-6 (22))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

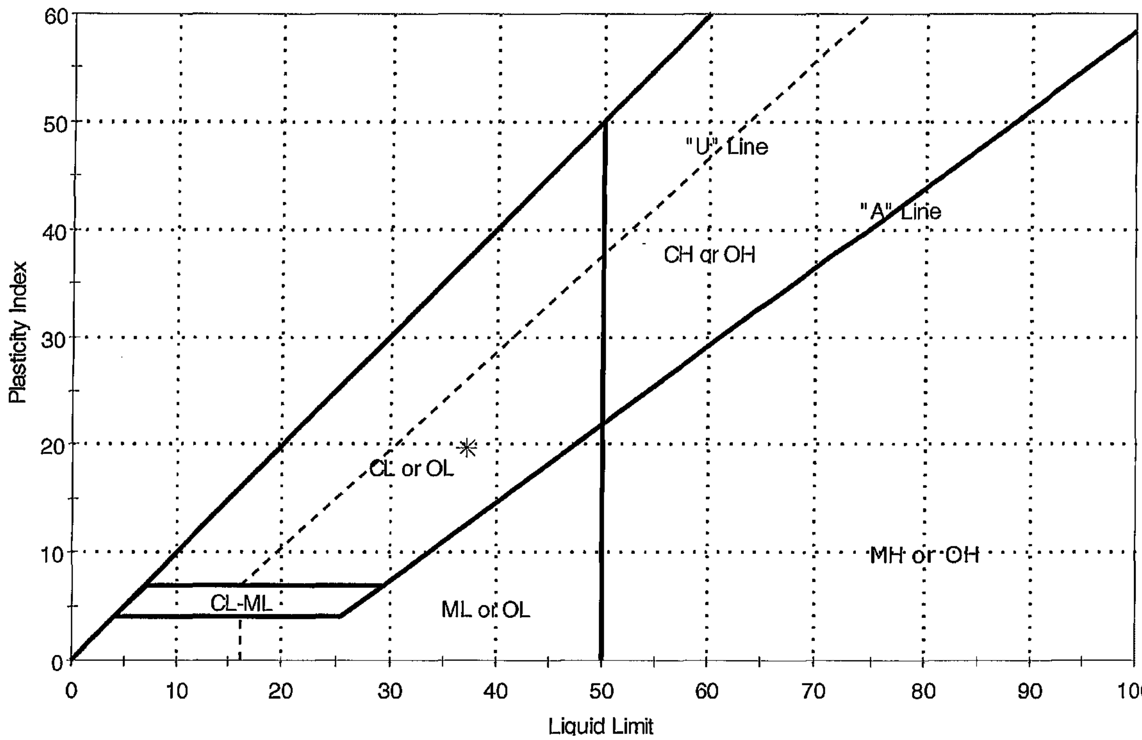
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:40:19 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20038	Sample Type: tube	Tested By:	ap
Sample ID:OL-0318-05	Test Date: 07/20/07	Checked By:	jdt
Depth : 40-42 ft	Test Id: 113189		
Test Comment: ---			
Sample Description: Moist, dark reddish gray clay			
Sample Comment: ---			

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0318-05	-STA-200	40-42 ft	40	37	17	20	1	lean clay (CL)

Sample Prepared using the WET method
0% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilentancy: SLOW
Toughness: LOW

printed 8/10/2007 7:40:29 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20038	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-05	Test Date:	07/24/07	Checked By:	jdt
Depth :	40-42 ft	Test Id:	113234		
Test Comment:	---				
Sample Description:	Moist, dark reddish gray clay				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20038	OL-0318-05	40-42 ft	Moist, dark reddish gray clay	2.77

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:40:38 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20052	Sample Type: tube	Tested By:	mll
Sample ID: OL-0318-06	Test Date: 08/10/07	Checked By:	n/a
Depth : 4-6 ft	Sample Id: 53084		
Test Comment: ---			
Sample Description: Wet, light greenish gray silt			
Sample Comment: ---			

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20052	OL-0318-06	4-6 ft	Wet, light greenish gray silt	367.3

Notes: Temperature of Drying : 110° Celsius

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-06	Test Date:	07/25/07	Checked By:	jdt
Depth :	4-6 ft	Test Id:	113217		
Test Comment:	---				
Sample Description:	Wet, light greenish gray silt				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
)L-STA-2005:	OL-0318-06	4-6 ft	Wet, light greenish gray silt	140	54.9	45.1

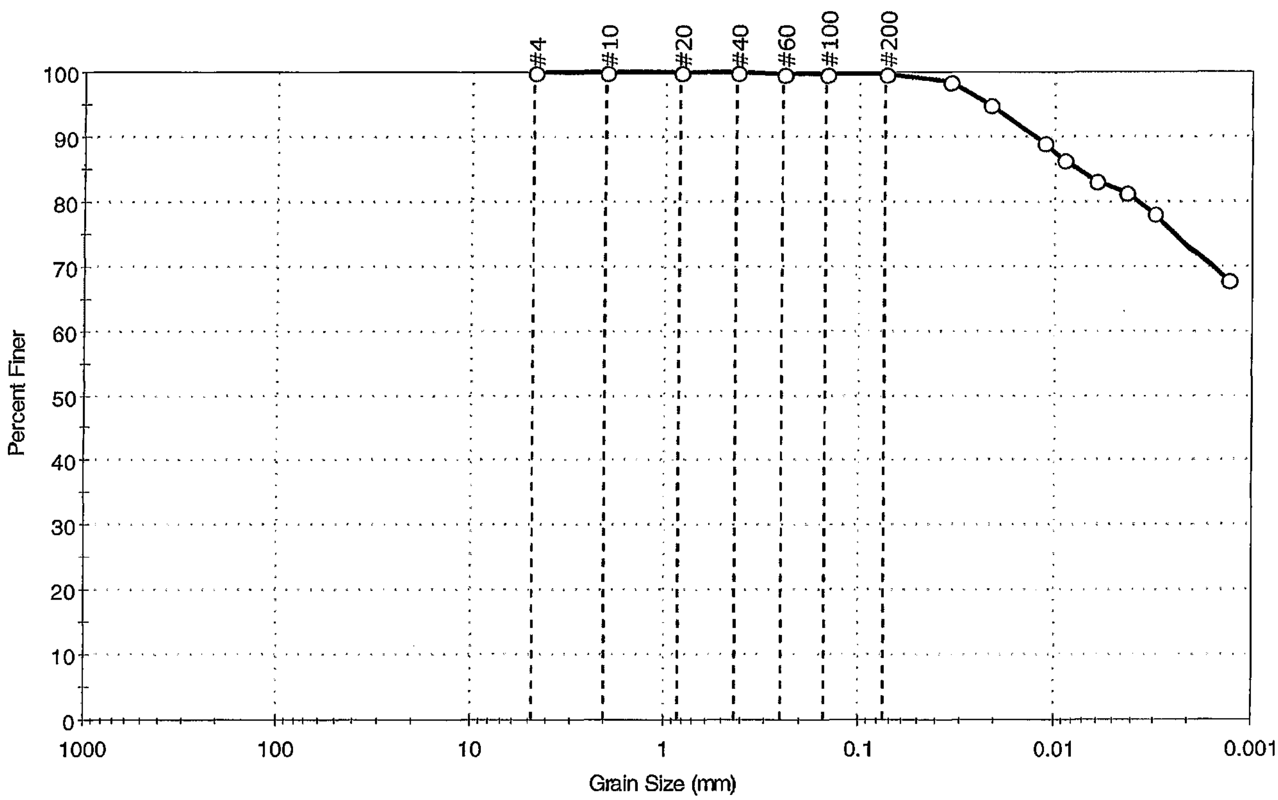
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 7:41:58 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-06	Test Date:	07/25/07	Checked By:	jdt
Depth :	4-6 ft	Test Id:	113244		
Test Comment:	---				
Sample Description:	Wet, light greenish gray silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	0.3	99.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.075	100		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0353	98		
---	0.0217	95		
---	0.0115	89		
---	0.0089	87		
---	0.0061	83		
---	0.0043	81		
---	0.0030	78		
---	0.0013	68		

Coefficients

D_{85} =0.0075 mm D_{30} =N/A
D_{60} =N/A D_{15} =N/A
D_{50} =N/A D_{10} =N/A
C_u =N/A C_c =N/A

Classification

ASTM   elastic silt (MH)

AASHTO   Clayey Soils (A-7-5 (86))

Sample/Test Description

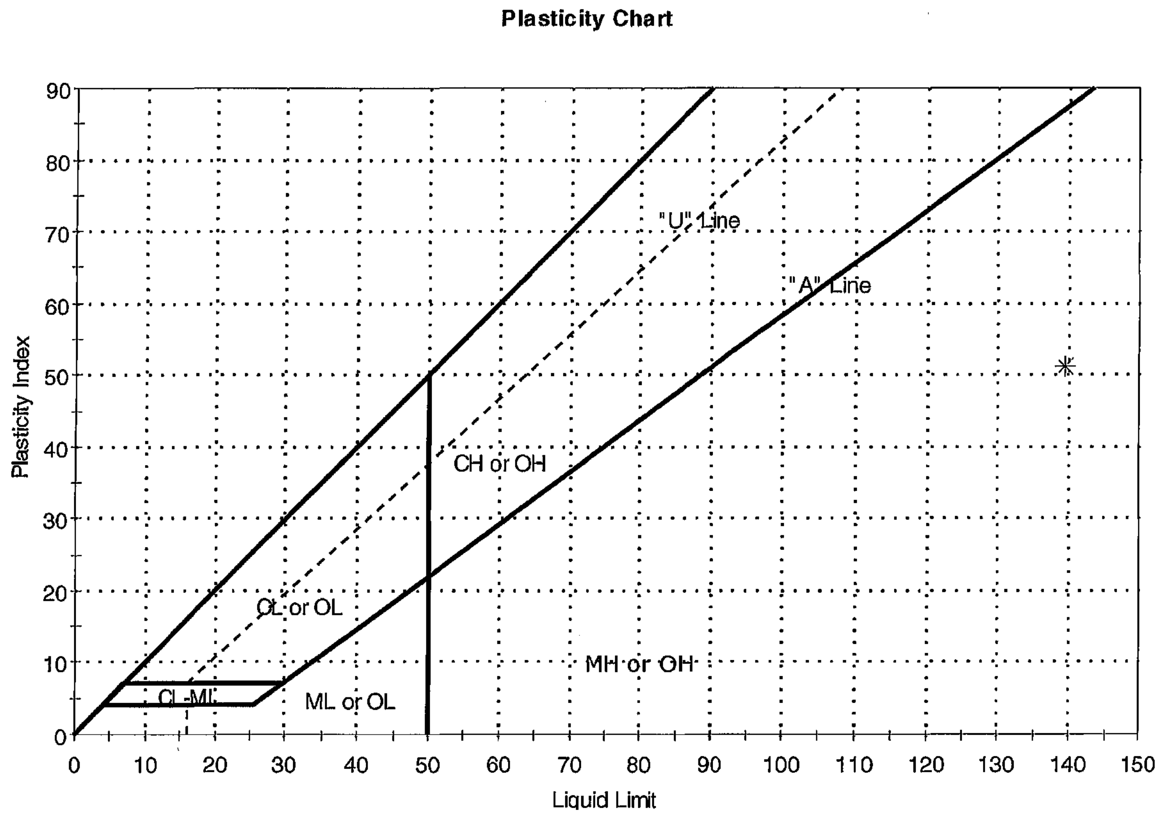
Sand/Gravel Particle Shape : ROUNDED
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:42:09 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20052	Sample Type: tube	Tested By:	ap
Sample ID:OL-0318-06	Test Date: 07/30/07	Checked By:	jdt
Depth : 4-6 ft	Test Id: 113190		
Test Comment: ---			
Sample Description: Wet, light greenish gray silt			
Sample Comment: ---			

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0318-06	-STA-200	4-6 ft	367	139	88	51	5	elastic silt (MH)

Sample Prepared using the WET method

0% Retained on #40 Sieve

Dry Strength: HIGH

Dilentancy: SLOW

Toughness: LOW

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-06	Test Date:	07/24/07	Checked By:	jdt
Depth :	4-6 ft	Test Id:	113235		
Test Comment:	---				
Sample Description:	Wet, light greenish gray silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20052	OL-0318-06	4-6 ft	Wet, light greenish gray silt	2.76

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:42:35 AM

GeoTesting
express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0318-06	Test Date:	08/10/07	Checked By:	jdt
Depth :	4-6 ft	Test Id:	113199		
Test Comment:	---				
Sample Description:	Wet, light greenish gray silt				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
.-STA-200	)L-0318-0	4-6 ft	Wet, light greenish gray silt	2.87	6.00	74.0	367.3	16.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:42:59 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-09	Test Date:	08/10/07	Checked By:	n/a
Depth :	24-26 ft	Sample Id:	53087		
Test Comment:	---				
Sample Description:	Moist, dark greenish gray silt				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20052	OL-0318-09	24-26 ft	Moist, dark greenish gray silt	62

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 7:43:32 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-09	Test Date:	07/26/07	Checked By:	jdt
Depth :	24-26 ft	Test Id:	113218		
Test Comment:	---				
Sample Description:	Moist, dark greenish gray silt				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-STA-2005:	OL-0318-09	24-26 ft	Moist, dark greenish gray silt	27	77.3	22.7

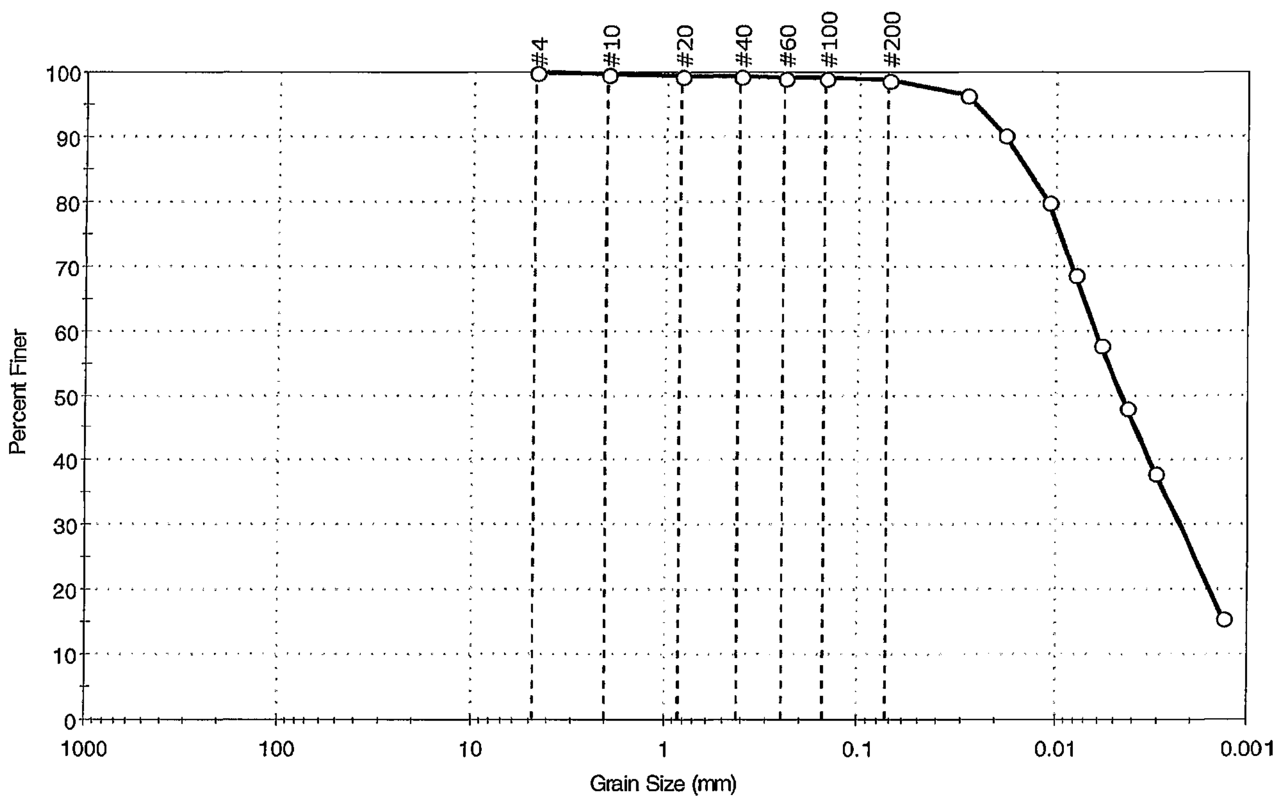
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110º C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440º C

printed 8/10/2007 7:43:40 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-09	Test Date:	07/23/07	Checked By:	jdt
Depth :	24-26 ft	Test Id:	113245		
Test Comment:	---				
Sample Description:	Moist, dark greenish gray silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	1.0	99.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	99		
#40	0.42	99		
#60	0.25	99		
#100	0.15	99		
#200	0.074	99		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0292	96		
---	0.0183	90		
---	0.0110	80		
---	0.0081	69		
---	0.0059	58		
---	0.0043	48		
---	0.0031	38		
---	0.0013	15		

Coefficients

D_{85} =0.0141 mm	D_{30} =0.0023 mm
D_{60} =0.0063 mm	D_{15} =N/A
D_{50} =0.0046 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM elastic silt (MH)

AASHTO Clayey Soils (A-7-5 (33))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

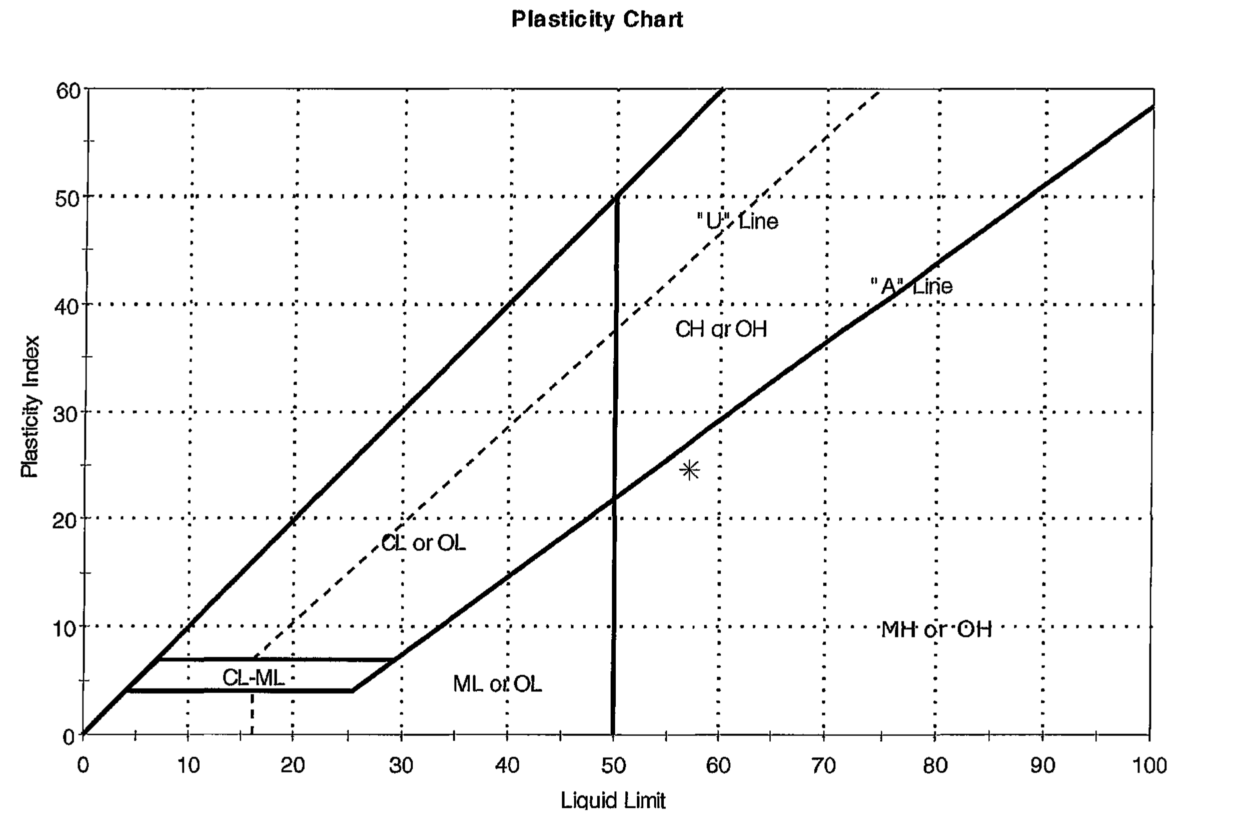
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:43:52 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-09	Test Date:	07/27/07	Checked By:	jdt
Depth :	24-26 ft	Test Id:	113191		
Test Comment:	---				
Sample Description:	Moist, dark greenish gray silt				
Sample Comment:	---				

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
✳	OL-0318-09	-STA-200	24-26 ft	62	57	33	24	1	elastic silt (MH)

Sample Prepared using the WET method
1% Retained on #40 Sieve
Dry Strength: n/a
Dilentancy: SLOW
Toughness: LOW

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-09	Test Date:	07/26/07	Checked By:	jdt
Depth :	24-26 ft	Test Id:	113236		
Test Comment:	---				
Sample Description:	Moist, dark greenish gray silt				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20052	OL-0318-09	24-26 ft	Moist, dark greenish gray silt	2.68

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:44:11 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-10	Test Date:	08/10/07	Checked By:	n/a
Depth :	30-32 ft	Sample Id:	53088		
Test Comment:	---				
Sample Description:	Moist, olive brown clay				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20052	OL-0318-10	30-32 ft	Moist, olive brown clay	26.6

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 7:45:06 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-10	Test Date:	07/25/07	Checked By:	jdt
Depth :	30-32 ft	Test Id:	113219		
Test Comment:	---				
Sample Description:	Moist, olive brown clay				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-STA-20052	OL-0318-10	30-32 ft	Moist, olive brown clay	16	91.6	8.4

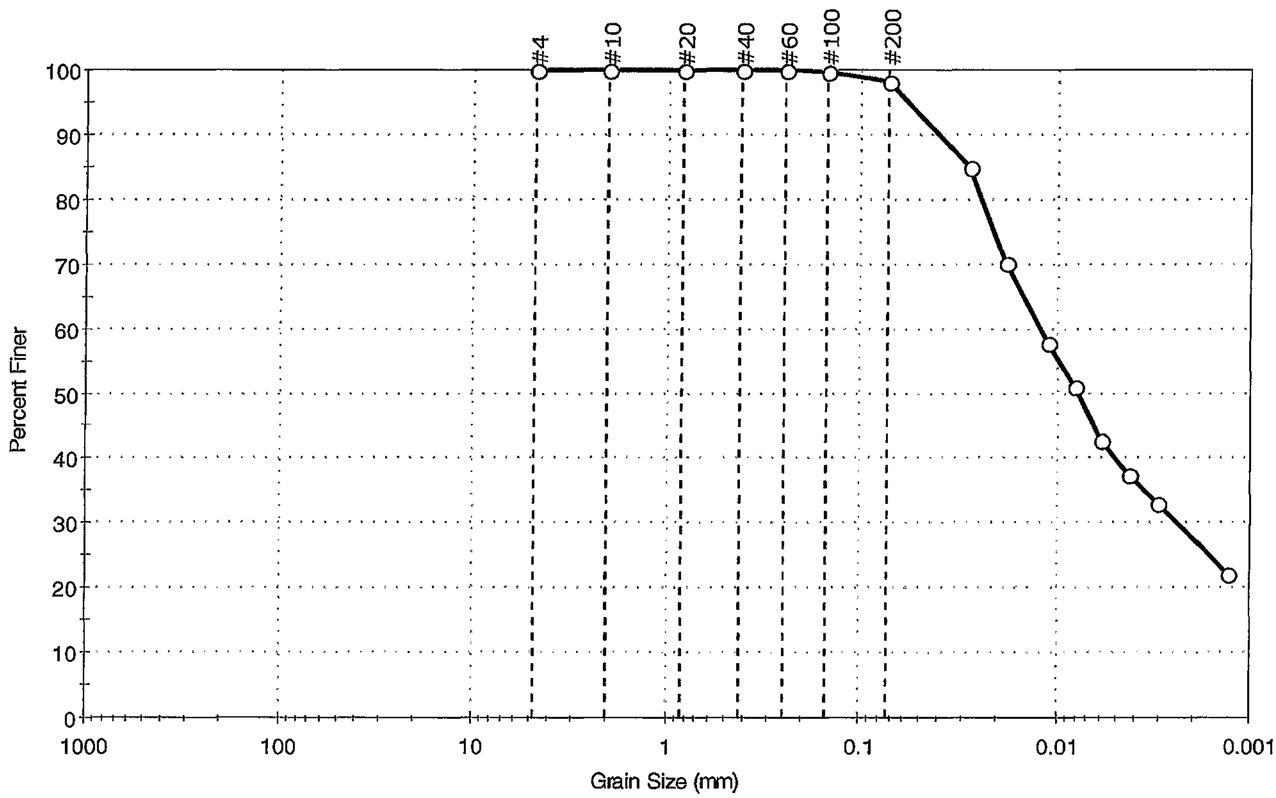
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110º C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440º C

printed 8/10/2007 7:45:17 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20052	Sample Type: tube	Tested By:	mll
Sample ID: OL-0318-10	Test Date: 07/23/07	Checked By:	jdt
Depth : 30-32 ft	Test Id: 113246		
Test Comment: ---			
Sample Description: Moist, olive brown clay			
Sample Comment: ---			

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	1.8	98.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.074	98		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0280	85		
---	0.0182	70		
---	0.0112	58		
---	0.0081	51		
---	0.0059	43		
---	0.0043	37		
---	0.0030	33		
---	0.0013	22		

Coefficients

D_{85} = 0.0281 mm — D_{30} = 0.0024 mm
D_{60} = 0.0123 mm — D_{15} = N/A
D_{50} = 0.0078 mm — D_{10} = N/A
C_u = N/A — C_c = N/A

Classification

ASTM lean clay (CL)

AASHTO Silty Soils (A-4 (7))

Sample/Test Description

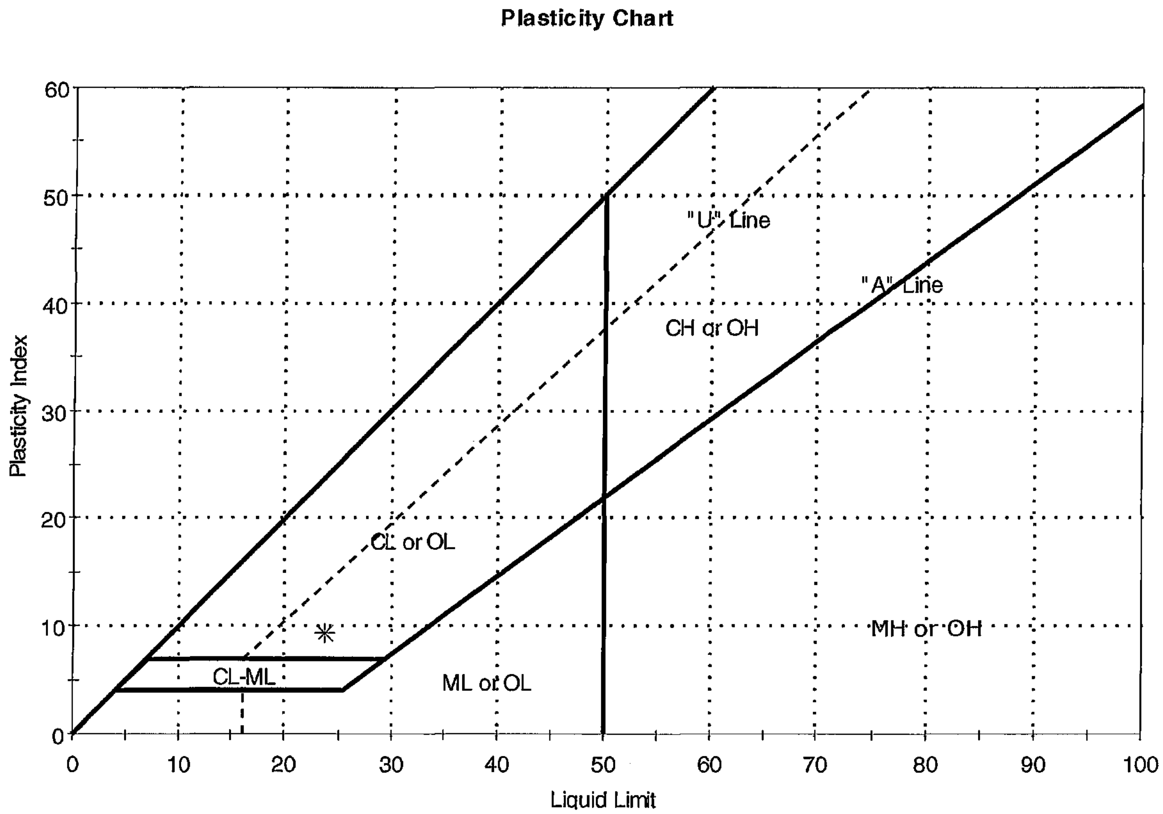
Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-10	Test Date:	07/23/07	Checked By:	jdt
Depth :	30-32 ft	Test Id:	113192		
Test Comment:	---				
Sample Description:	Moist, olive brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0318-10	-STA-200	30-32 ft	27	24	15	9	1	lean clay (CL)

Sample Prepared using the WET method
0% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilentancy: SLOW
Toughness: LOW

printed 8/10/2007 7:45:38 AM

GeoTesting
express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-10	Test Date:	07/24/07	Checked By:	jdt
Depth :	30-32 ft	Test Id:	113237		

Test Comment: ---
Sample Description: Moist, olive brown clay
Sample Comment: ---

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20052	OL-0318-10	30-32 ft	Moist, olive brown clay	2.7

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20052	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0318-10	Test Date:	08/10/07	Checked By:	jdt
Depth :	30-32 ft	Test Id:	113201		
Test Comment:	---				
Sample Description:	Moist, olive brown clay				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
.-STA-200	)L-0318-1	30-32 ft	Moist, olive brown clay	2.87	5.90	124	27.8	97.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:46:49 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-13	Test Date:	08/10/07	Checked By:	n/a
Depth :	4-6 ft	Sample Id:	53091		
Test Comment:	---				
Sample Description:	Wet, gray silt with sand				
Sample Comment:	---				

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20054	OL-0318-13	4-6 ft	Wet, gray silt with sand	140.5

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 7:47:50 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-13	Test Date:	07/25/07	Checked By:	jdt
Depth :	4-6 ft	Test Id:	113220		
Test Comment:	---				
Sample Description:	Wet, gray silt with sand				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
)L-STA-2005‹	OL-0318-13	4-6 ft	Wet, gray silt with sand	73	57.	43.

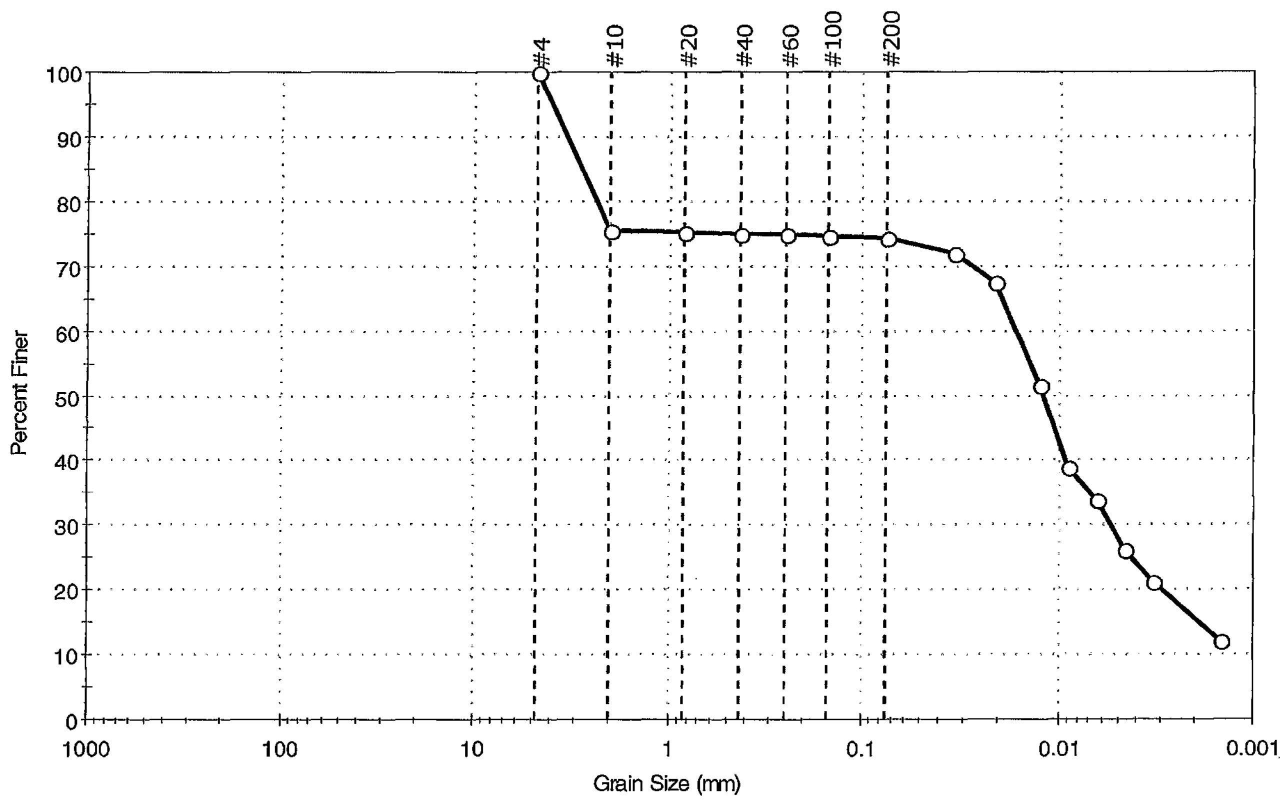
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110º C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440º C

printed 8/10/2007 7:47:57 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20054	Sample Type: tube	Tested By:	mll
Sample ID:OL-0318-13	Test Date: 07/18/07	Checked By:	jdt
Depth : 4-6 ft	Test Id: 113247		
Test Comment: ---			
Sample Description: Wet, gray silt with sand			
Sample Comment: ---			

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	25.6	74.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	75		
#20	0.84	75		
#40	0.42	75		
#60	0.25	75		
#100	0.15	75		
#200	0.075	74		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0341	72		
---	0.0213	67		
---	0.0126	52		
---	0.0090	39		
---	0.0064	34		
---	0.0046	26		
---	0.0033	21		
---	0.0015	12		

Coefficients

D_{85} =2.7982 mm	D_{30} =0.0054 mm
D_{60} =0.0166 mm	D_{15} =0.0019 mm
D_{50} =0.0120 mm	D_{10} =0.0012 mm
C_u =N/A	C_c =N/A

Classification

ASTM elastic silt with sand (MH)

AASHTO Clayey Soils (A-7-5 (53))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

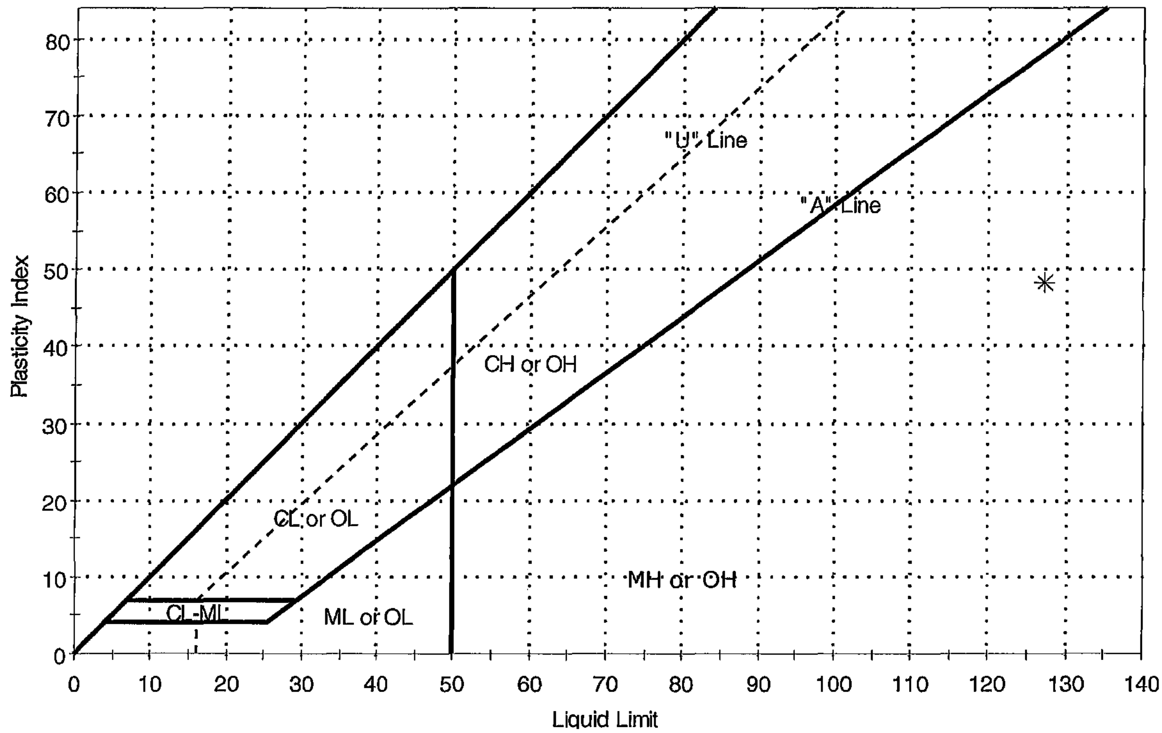
printed 8/10/2007 7:48:13 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20054	Sample Type: tube	Tested By:	ap
Sample ID:OL-0318-13	Test Date: 07/20/07	Checked By:	jdt
Depth : 4-6 ft	Test Id: 113193		
Test Comment: ---			
Sample Description: Wet, gray silt with sand			
Sample Comment: ---			

Atterberg Limits - ASTM D 4318-05

Plasticity Chart



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0318-13	-STA-200	4-6 ft	140	127	79	48	1	elastic silt with sand (MH)

Sample Prepared using the WET method
25% Retained on #40 Sieve
Dry Strength: HIGH
Dilentancy: SLOW
Toughness: LOW

printed 8/10/2007 7:48:23 AM

GeoTesting
express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-13	Test Date:	07/20/07	Checked By:	jdt
Depth :	4-6 ft	Test Id:	113238		
Test Comment:	---				
Sample Description:	Wet, gray silt with sand				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20054	OL-0318-13	4-6 ft	Wet, gray silt with sand	2.58

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:48:33 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0318-13	Test Date:	08/10/07	Checked By:	jdt
Depth :	4-6 ft	Test Id:	113202		
Test Comment:	---				
Sample Description:	Wet, gray silt with sand				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
.-STA-200	)L-0318-1	4-6 ft	Wet, gray silt with sand	2.87	6.00	77.0	230.6	23.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:49:23 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20054	Sample Type: tube	Tested By:	mll
Sample ID: OL-0318-14	Test Date: 08/10/07	Checked By:	n/a
Depth : 20-22 ft	Sample Id: 53092		
Test Comment: ---			
Sample Description: Moist, grayish brown clay			
Sample Comment: ---			

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20054	OL-0318-14	20-22 ft	Moist, grayish brown clay	47

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 7:49:58 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-14	Test Date:	07/24/07	Checked By:	jdt
Depth :	20-22 ft	Test Id:	113221		
Test Comment:	---				
Sample Description:	Moist, grayish brown clay				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
)L-STA-2005‹	OL-0318-14	20-22 ft	Moist, grayish brown clay	34	89.9	10.1

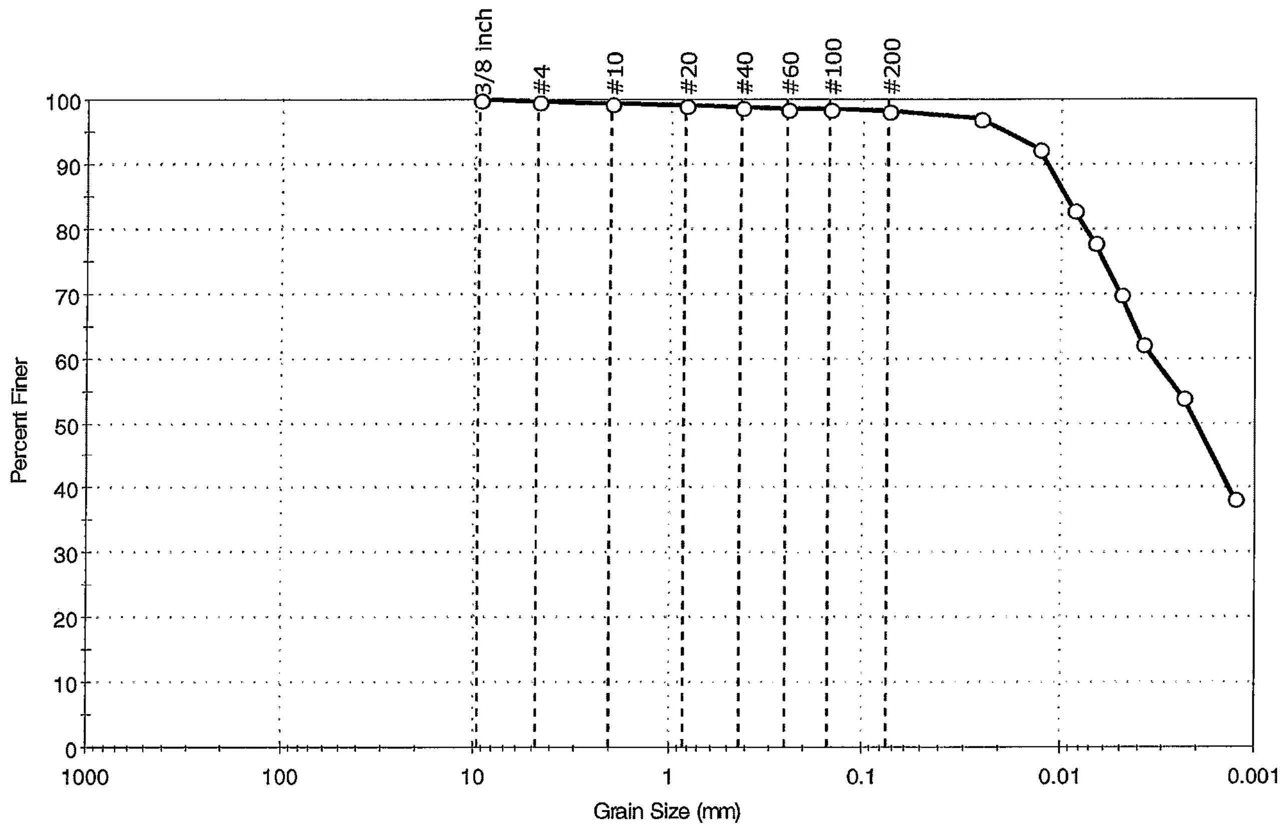
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass;
dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 7:50:06 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science		
Project:	Onondaga		
Location:	Syracuse	Project No:	GTX-7143
Boring ID: OL-STA-20054	Sample Type: tube	Tested By:	mll
Sample ID:OL-0318-14	Test Date: 07/24/07	Checked By:	jdt
Depth : 20-22 ft	Test Id: 113248		
Test Comment:	---		
Sample Description:	Moist, grayish brown clay		
Sample Comment:	---		

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.3	1.6	98.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
3/8 inch	9.51	100		
#4	4.75	100		
#10	2.00	99		
#20	0.84	99		
#40	0.42	99		
#60	0.25	99		
#100	0.15	98		
#200	0.075	98		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0258	97		
---	0.0129	92		
---	0.0085	83		
---	0.0068	78		
---	0.0050	70		
---	0.0038	62		
---	0.0024	54		
---	0.0013	38		

Coefficients

D_{85} =0.0093 mm — D_{30} =N/A

D_{60} =0.0034 mm — D_{15} =N/A

D_{50} =0.0020 mm — D_{10} =N/A

C_u =N/A — C_c =N/A

Classification

ASTM lean clay (CL)

AASHTO Clayey Soils (A-7-6 (27))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

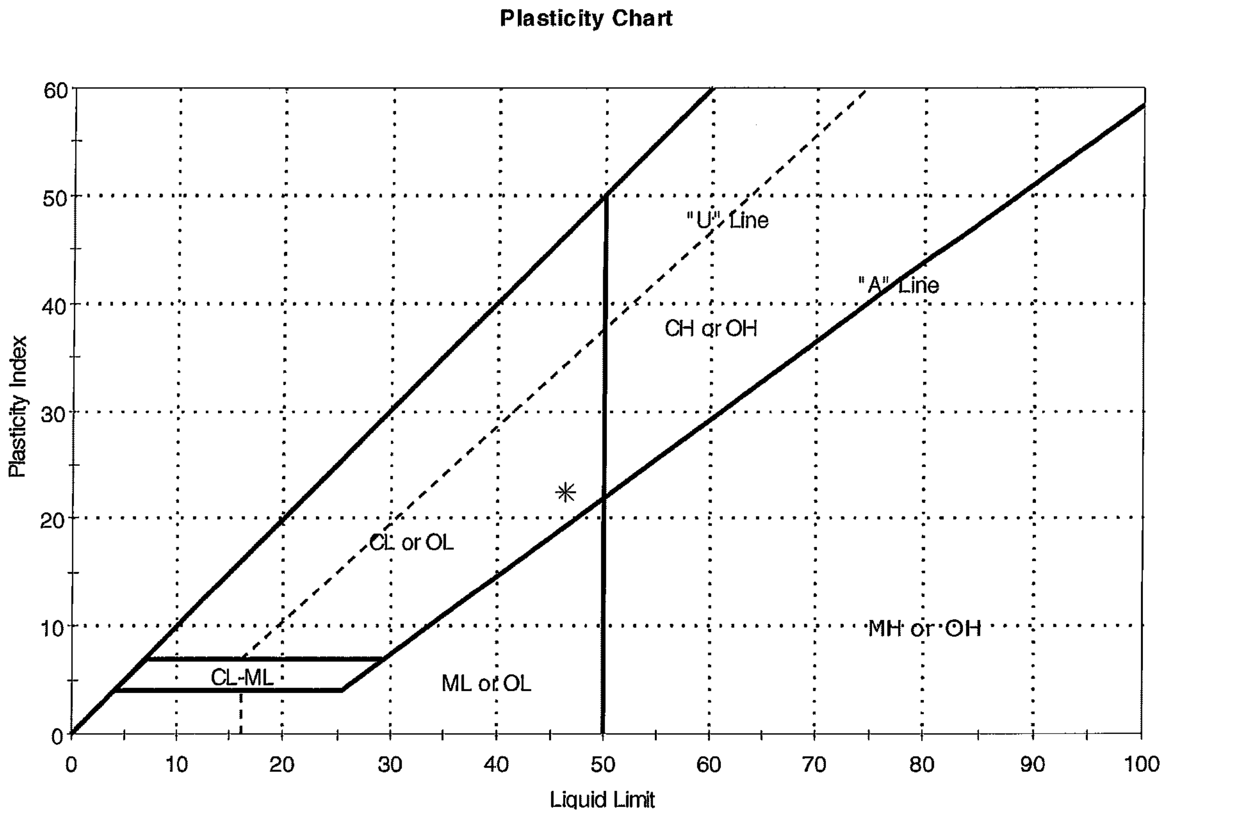
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:50:17 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20054	Sample Type: tube	Tested By:	ap
Sample ID: OL-0318-14	Test Date: 07/19/07	Checked By:	jdt
Depth : 20-22 ft	Test Id: 113194		
Test Comment: ---			
Sample Description: Moist, grayish brown clay			
Sample Comment: ---			

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0318-14	-STA-200	20-22 ft	47	46	24	22	1	lean clay (CL)

Sample Prepared using the WET method
1% Retained on #40 Sieve
Dry Strength: VERY HIGH
Dilentancy: NONE
Toughness: LOW

printed 8/10/2007 7:50:25 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-14	Test Date:	07/26/07	Checked By:	jdt
Depth :	20-22 ft	Test Id:	113239		
Test Comment:	---				
Sample Description:	Moist, grayish brown clay				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20054	OL-0318-14	20-22 ft	Moist, grayish brown clay	2.82

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:50:36 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20054	Sample Type: tube	Tested By:	mll
Sample ID:OL-0318-15	Test Date: 08/10/07	Checked By:	n/a
Depth : 26-28 ft	Sample Id: 53093		
Test Comment: ---			
Sample Description: Moist, dark yellowish brown clay			
Sample Comment: ---			

Moisture Content of Soil - ASTM D 2216-05

Boring ID	Sample ID	Depth	Description	Moisture Content,%
OL-STA-20054	OL-0318-15	26-28 ft	Moist, dark yellowish brown clay	31.3

Notes: Temperature of Drying : 110° Celsius

printed 8/10/2007 7:51:19 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-15	Test Date:	07/26/07	Checked By:	jdt
Depth :	26-28 ft	Test Id:	113222		
Test Comment:	---				
Sample Description:	Moist, dark yellowish brown clay				
Sample Comment:	---				

Moisture, Ash, and Organic Matter - ASTM D 2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
OL-STA-2005	OL-0318-15	26-28 ft	Moist, dark yellowish brown clay	24	93.6	6.4

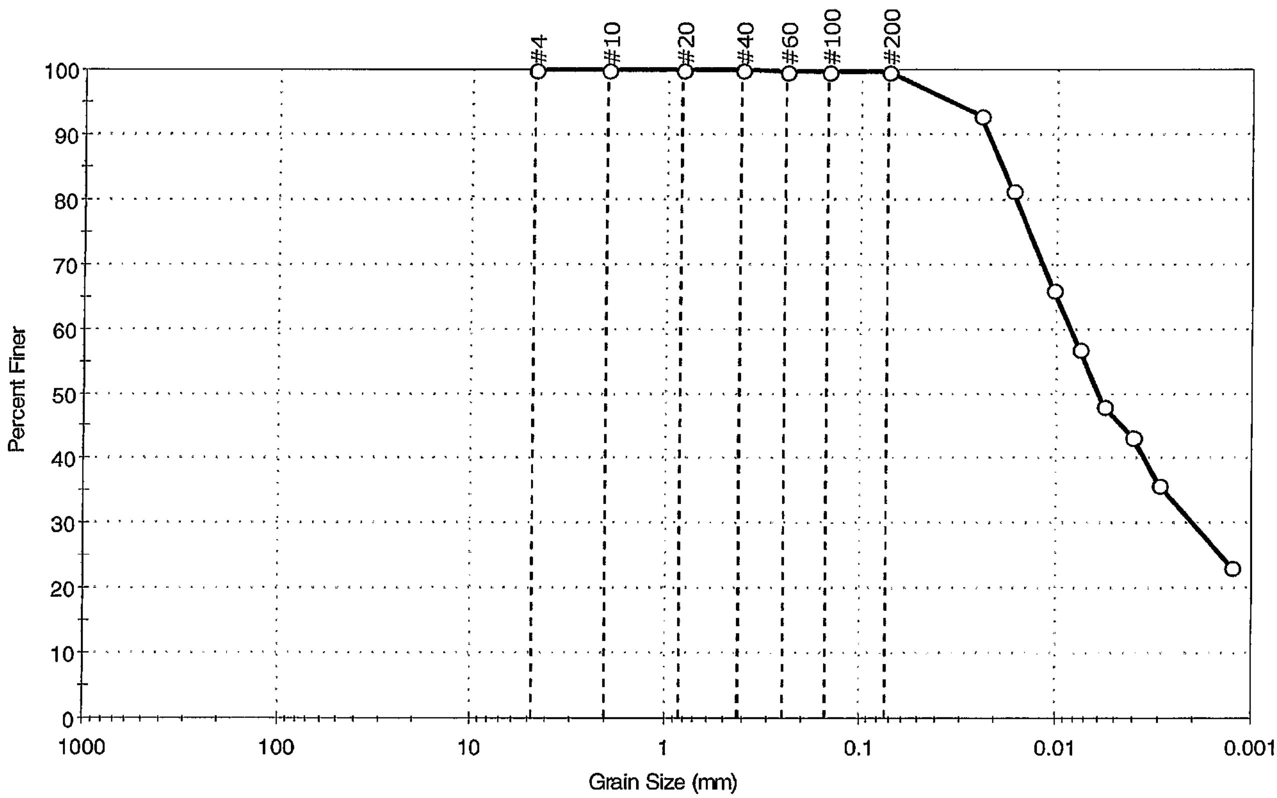
Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 110° C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C

printed 8/10/2007 7:51:29 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	mll
Sample ID:	OL-0318-15	Test Date:	07/17/07	Checked By:	jdt
Depth :	26-28 ft	Test Id:	113249		
Test Comment:	---				
Sample Description:	Moist, dark yellowish brown clay				
Sample Comment:	---				

Particle Size Analysis - ASTM D 422-63 (reapproved 2002)



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	0.0	0.2	99.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.84	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	100		
#200	0.074	100		
---	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0247	93		
---	0.0167	82		
---	0.0105	66		
---	0.0077	57		
---	0.0057	48		
---	0.0041	43		
---	0.0030	36		
---	0.0013	23		

Coefficients

D_{85} =0.0188 mm	D_{30} =0.0020 mm
D_{60} =0.0086 mm	D_{15} =N/A
D_{50} =0.0061 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM lean clay (CL)

AASHTO Clayey Soils (A-6 (11))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

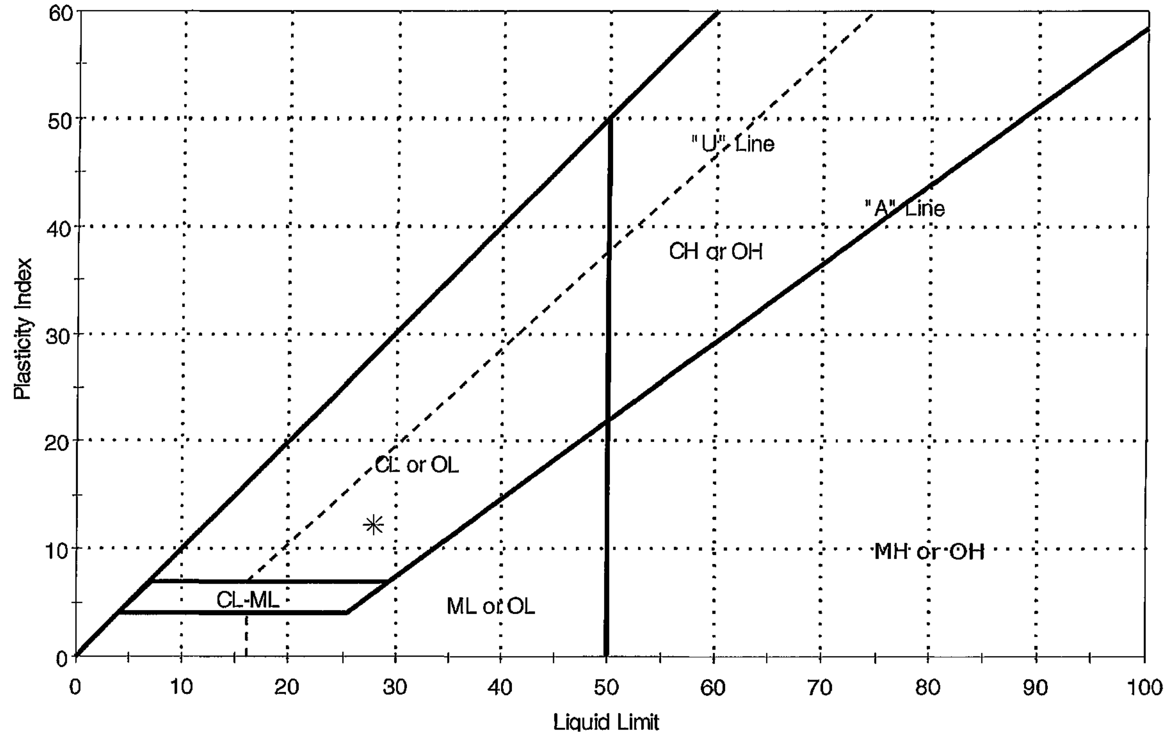
Sand/Gravel Hardness : HARD

printed 8/10/2007 7:51:41 AM

GeoTesting
express
a subsidiary of Geocomp Corporation

Client: Parsons Engineering Science			
Project: Onondaga			
Location: Syracuse		Project No:	GTX-7143
Boring ID: OL-STA-20054	Sample Type: tube	Tested By:	ap
Sample ID:OL-0318-15	Test Date: 08/02/07	Checked By:	jdt
Depth : 26-28 ft	Test Id: 113195		
Test Comment: ---			
Sample Description: Moist, dark yellowish brown clay			
Sample Comment: ---			

Atterberg Limits - ASTM D 4318-05



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
*	OL-0318-15	-STA-200	26-28 ft	31	28	16	12	1	lean clay (CL)

Sample Prepared using the WET method

0% Retained on #40 Sieve

Dry Strength: HIGH

Dilentancy: SLOW

Toughness: LOW

printed 8/10/2007 7:51:51 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	ap
Sample ID:	OL-0318-15	Test Date:	07/25/07	Checked By:	jdt
Depth :	26-28 ft	Test Id:	113240		
Test Comment:	---				
Sample Description:	Moist, dark yellowish brown clay				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D 854-06

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
OL-STA-20054	OL-0318-15	26-28 ft	Moist, dark yellowish brown clay	2.77

Notes: Specific Gravity performed by using method A (oven dried specimens) of ASTM D 854
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:52:00 AM

GeoTesting express
a subsidiary of Geocomp Corporation

Client:	Parsons Engineering Science				
Project:	Onondaga				
Location:	Syracuse			Project No:	GTX-7143
Boring ID:	OL-STA-20054	Sample Type:	tube	Tested By:	md
Sample ID:	OL-0318-15	Test Date:	08/10/07	Checked By:	jdt
Depth :	26-28 ft	Test Id:	113204		
Test Comment:	---				
Sample Description:	Moist, dark yellowish brown clay				
Sample Comment:	---				

Density of Soil In Place by the Drive Cylinder Method - ASTM D 2937-04

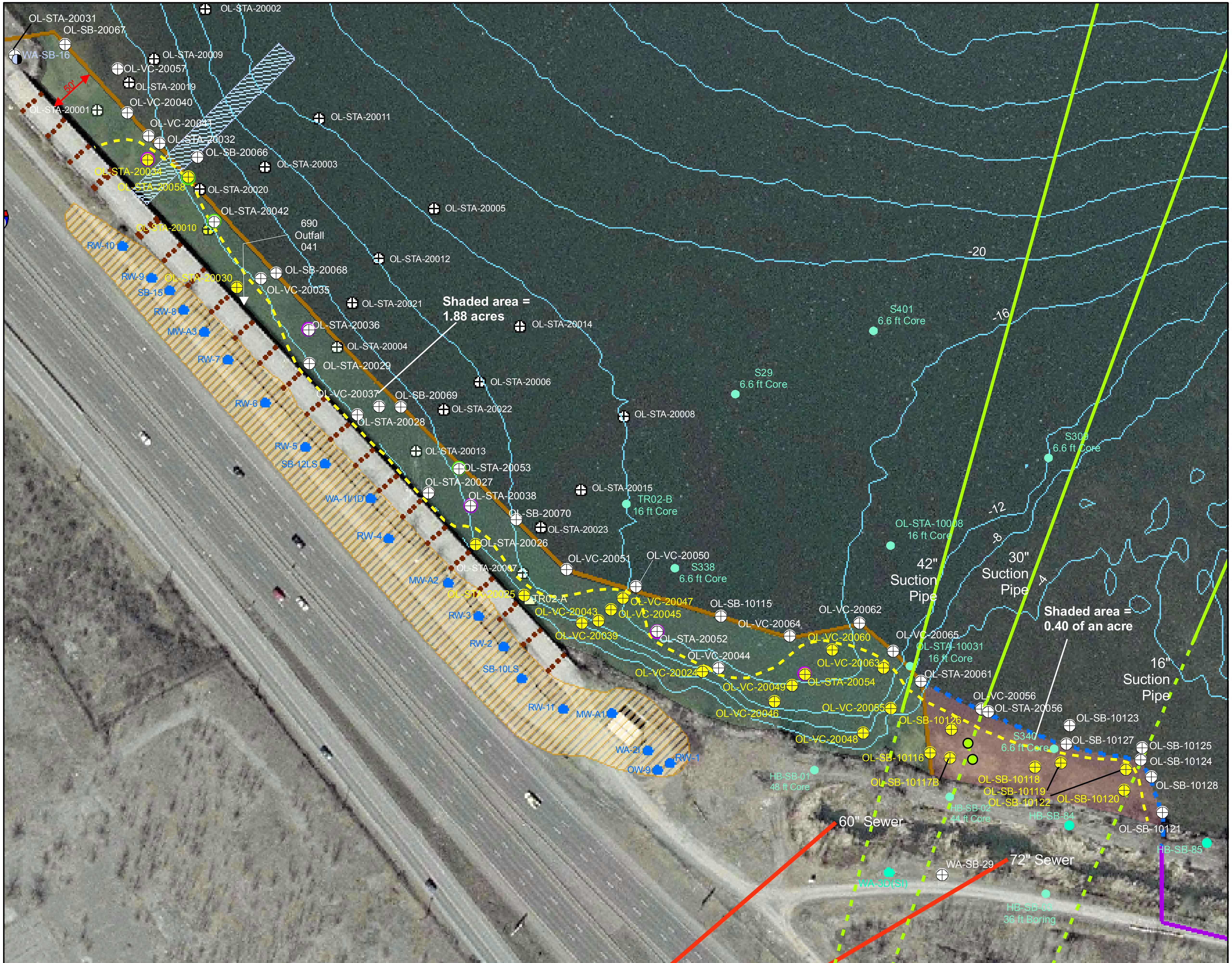
Boring ID	Sample ID	Depth	Visual Description	Sample Diameter, in	Sample Height, in	Bulk Density, pcf	Moisture Content, %	Dry Density, pcf
.-STA-200	)L-0318-1	26-28 ft	Moist, dark yellowish brown clay	2.87	6.00	114	32	86.0

Notes: Density determined on undisturbed samples provided to GeoTesting Express.
Moisture Content determined by ASTM D 2216.

printed 8/10/2007 7:53:10 AM

ATTACHMENT B

FIGURE 1 – PROPOSED BARRIER WALL ALIGNMENT



Semet Geotech Boring

Approximate Footprint of Abandoned Wharf and Conveyor

Approximate Footprint of Abandoned Pier

Approximate Extent of DNAPL on-shore in Shallow Zone (Marl)

Causeway Pile (16" Concrete)

Existing Onshore Recovery Well

Upwelling Investigation Boring

Proposed Consolidation Boring

Proposed Core with Silt/Clay Unit Undefined

Shallow Core/Boring with no DNAPL

Shallow Core/Boring with Lenses of DNAPL

Extent of DNAPL

Proposed Barrier Wall Alignment

Proposed Revised Barrier Wall Alignment

Proposed Wastebed B/Harbor Brook Wall Alignment

Historical Sample

Boring Encountered Pipe (OL-SB-10117 and -10117A)

Notes:
1. Bathymetry is shown in 4' intervals.

100 50 0 100
Feet

FIGURE 1

Honeywell

Onondaga Lake
Syracuse, New York

Willis-Semet IRM Proposed
Barrier Wall Borings (May 18, 2007)

PARSONS

290 ELWOOD DAVIS RD, SUITE 312, LIVERPOOL, NY 13088 Phone:(315)451-9560

Q:\GIS\GIS_Lake\dnapl_invest\Prop_barr_wall-Will_Sem5-18-07.mxd

ATTACHMENT C

BORING LOGS

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10115
Date: 05/14/2007
Weather: Clear 55 deg F

Northing: 1118004.96	Drilling Company: PARRATT WOLFF INC	Total Depth: 28.0 FT
Easting: 923135.01	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			WR-WR-WR-WR	0	7.4		SOLW	Wet, very soft, light gray/white, silt-like grains. Pin-size NAPL in bottom 2 inches and 5 inches. Low plasticity. Mothball and sewage-like odors.		Solvay Waste
			WR-WR-WR-WR	0	2.6		SOLW	Wet, very soft, light gray with some grayish-green lenses of silt-like grains. Low plasticity. Mothball and sewage like odors.		
5			WR-WR-WR-WR	0	0		SOLW	Wet, very soft, light gray with some grayish-green lenses silt-like grains. Low plasticity. Mothball and sewage like odors.		
			WR-WR-WR-WR	0	0		SOLW	Wet, very soft, light gray/white silt-like grains. Low plasticity. Mothball and sewage like odors		
			WR-WR-WR-WR	0	0.3		SOLW	Wet, very soft, light gray with some grayish-green lenses silt-like grains. Low plasticity. mothball and sewage like odors.		
10			4-2-2-1	4	0		ML/CL	Top 8 inches: Wet, very soft, light gray, silt-like grains. Brown staining 6-8 inches from the top. Low plasticity. Mothball and sewage like odors (SOLW). Bottom 16 inches: Moist, stiff, gray, SILT and CLAY, trace shells. Low plasticity. Sulfur odor (ML/CL).		Marl
			4-1-1-1	2	0		ML/CL	Moist, stiff, gray, SILT and CLAY, trace shells. Low plasticity. Sulfur odor.		
15			WR-WR-WR-WR	0	0		ML/CL	Moist, stiff, gray, SILT and CLAY, trace shells. Low plasticity. Sulfur odor.		
16										

BORING LOG	Page 2 of 2	Site: Onondaga Lake (Syracuse NY)
Honeywell		Boring No: OL-SB-10115 Date: 05/14/2007 Weather: Clear 55 deg F

Northing: 1118004.96 Easting: 923135.01 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 28.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WR-WR-WR-WR	0	0		ML/CL	Moist, medium stiff, gray, SILT and CLAY, trace shells, trace black friable organics. Low plasticity. Sulfur odor.		Marl
			WR-WR-WR-WR	0	0		ML/CL	Wet, soft, gray, SILT and CLAY, trace shells. Low plasticity. Sulfur odor.		
20			WR-WR-WR-WR	0	0		CL	Wet, very soft, gray transitioning to red/brown/black CLAY, some silt, trace shells throughout. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0	0		CL	Top 3 inches: Wet, very soft, gray transitioning to red/brown/black CLAY, some silt, trace shells throughout. Low plasticity. Sulfur odor. Bottom 21 inches: Wet, very soft, red/brown CLAY, some silt. Low to medium plasticity.		Clay
25			WR-WR-WR-WR	0	0		CL	Wet, very soft, red/brown CLAY, little silt. Low to medium plasticity.		
		OL-0317-01						GUS Sample. See geotechnical report for analysis.		
28.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10116
Date: 04/25/2007
Weather: Cloudy 50 deg F

Northing: 1117858.77
Easting: 923362.77
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 34.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0		1-1-2-6	3	4		SOLW	Wet, very soft, white to gray, silt-like grains. Calcified layers 0 to 3 inches from top. Courser grained from 16 to 19 inches. Low plasticity. Mothball odor.		
		6-7-5-7	12	5.2		SOLW	Wet, very soft, gray, silt-like grains, sand lenses 1 to 6 inches and 17 to 19 inches from the top. Sand lens 1 to 6 inches from top contains NAPL stringers. Low plasticity. Mothball odor.		
5		3-4-4-4	8	1.4		SOLW	Wet, very soft, gray, silt-like grains with courser grained cementations throughout. Low plasticity. Mothball odor.		
		3-3-2-2	5	1.2		SOLW	Wet, very stiff, dark gray silt-like grains and fine sand-like grains. Cemented layers. Low plasticity. Mothball odor.		Solvay Waste
		2-1-1-1	2	2.4		SOLW	Wet, very soft, light gray/white silt-like grains. Low plasticity. Mothball odor.		
10		WH-WH-WH-WH	0	7.8		SOLW	Wet, very soft, light gray/white silt-like grains. Low plasticity. Mothball odor.		
		WH-WH-WH-WH	0	2.3		SOLW	Wet, very soft, light gray/white silt-like grains. Light green color 20 to 24 inches from top. Low plasticity. Mothball odor.		
15		1-1-1-1	2	1.4		ML	Wet, very soft, gray SILT, little fine sand, little shells. Low plasticity. Sulfur odor.		
		WH-WH-WH-WH	0				No recovery.		Marl
		WR-WR-WR-WR	0	8.9		ML	Wet, very soft, gray, SILT, little fine sand, little shells. NAPL lenses from 2 to 7 inches and from 15 to 21 inches. Low plasticity. Sulfur and petroleum like odors.		
20									

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10116
Date: 04/25/2007
Weather: Cloudy 50 deg F

Northing: 1117858.77 Easting: 923362.77 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 34.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
20			WR-WR-WR-WR	0	16.8		ML	Wet, very soft, gray, SILT, little fine sand, trace shells. Saturated with pin-size NAPL. Low plasticity. Petroleum like odor.		Marl
			WR-WR-WR-WR	0	1660		ML	Wet, very soft, gray, SILT, little fine sand, trace shells. Saturated with pin-size NAPL. Low plasticity. Petroleum like odor.		
25			WR-WR-WR-WR	0	860		ML	Wet, very soft, gray, SILT, little fine sand, trace shells. Saturated with pin-size NAPL. Low plasticity. Petroleum like odor.		
			WR-WR-WR-WR	0	680		ML	Wet, very soft, gray, SILT, little fine sand, trace shells. Saturated with pin-size NAPL. Low plasticity. Petroleum like odor.		
			WR-WR-WR-WR	0	19.4		ML	Top 12 inches: Wet,very soft, gray,SILT,little fine sand, little shells. NAPL lens from 0 to 3 inches from the top. Low plasticity. Petroleum like odor. Bottom 12 inches: Wet, very soft, gray, SILT, some clay, trace shells. Low plasticity. Sulfur odor.		
30			WR-WR-WR-WR	0	27.8		ML	Wet, very soft, gray SILT, some clay, trace shells. Low plasticity. Petroleum -like odor.		
			WR-WR-WR-WR	0	1.4		CL	Wet, very soft, red/brown CLAY, little silt. Low to medium plasticity.		Clay
34.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10117B
Date: 04/26/2007
Weather: Cloudy 50 deg F

Northing: 1117852.93 Easting: 923384.42 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 20.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0								Wash casing to 14 feet.		
15			2-WH-WH-WH	0	0		ML	Wet, very soft, gray SILT, some fine sand, trace shells. Low plasticity. Sulfur odor.		Marl
			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray SILT, some fine sand, trace shells, wood fragment 6 inches from the top. Low plasticity. Sulfur odor.		Marl
20.0			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray SILT, some fine sand. NAPL saturation in the bottom 8 inches with NAPL stringers 3 inches from the top. Low plasticity. Sulfur and petroleum like odors.		Marl

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10117
Date: 04/25/2007
Weather: Light Rain 50 deg F

Northing: 1117851.31	Drilling Company: PARRATT WOLFF INC	Total Depth: 18.0 Ft
Easting: 923409.20	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			1-2-2-2	4	2.5		SOLW	Wet, very soft, light gray and white silt-like grains. Cemented layers throughout Low plasticity. mothball odor.		
			1-1-1-1	2	6.2		SOLW	Wet, very soft, light gray and white silt-like grains. Low plasticity. Mothball odor.		
5			1-1-1-1	2	59.2		SOLW	Wet, loose, dark gray to light gray sand-like grains, some silt-like grains. Isolated NAPL globules in bottom 6 inches. Mothball and petroleum like odors.		
			4-2-2-2	4	9.8		SOLW	Wet, loose, alternating light gray and dark gray sand-like and silt-like grained cementations. Isolated NAPL globules throughout. Mothball and petroleum odors		
			2-1-1-1	2	3		SOLW	Bottom 2 inches: Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor. Bottom 2 inches: Wet, very loose, dark gray, sand-like grains. Mothball odor.		Solvay Waste
10			WH-WH-WH-WH	0	3.8		SOLW	Wet, very soft, light gray, silt-like grains turning greenish-gray towards the bottom. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	3.8		SOLW	Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		
15			WH-WH-WH-WH	0	3.1		SOLW	Wet, very soft, light gray, silt-like grains. Top 3 inches greenish-gray color. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	3.3		SOLW	Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		
18.0										

Null field readings indicate a reading was not taken. End of boring at 18 ft due to an obstruction.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10117A
Date: 04/26/2007
Weather: Partly Cloudy 50 deg F

Northing: 1117868.78
Easting: 923403.94
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 16.0 Ft
Water Elev: NA
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0								Wash casing to 14 feet.		
15			1-2-1-2	3	0.6		SOLW	Wet, very soft, light gray, silt-like grains, trace cemented layers. Low plasticity. Mothball odor.		SOLVAY WASTE
16.0										

Null field readings indicate a reading was not taken. End of boring at 16 ft due to an obstruction

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10118
Date: 04/26/2007
Weather: Cloudy 60 deg F

Northing: 1117843.24
Easting: 923476.58
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 28.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			1-2-2-2	4			SOLW	Wet, soft, alternating light and dark gray silt-like and sand-like grains in cemented layers. Top 2 inches calcified. Low plasticity. Mothball odor.		
			2-3-2-2	5			SOLW	Wet, soft, dark gray and light gray sand-like and silt-like grains. Some cemented layers. NAPL lens 3 to 4 inches from the bottom. Low plasticity. Mothball odor.		
5			3-2-5-4	7			SOLW	Top 1.5 feet: Wet, very soft, light gray, silt-like grains. NAPL lens 9 to 12 inches from the bottom. Low plasticity. Mothball odor. Bottom 6 inches: Wet, very loose, dark gray, fine sand, trace silt. Well sorted. Mothball odor.		
			2-2-1-2	3			SOLW	Top 1 inch: Wet, very loose, dark gray, medium-fine sand-like grains. NAPL saturated. Well sorted. Petroleum like odor. Bottom 1 inch: Wet, very soft, gray, silt-like grains. Low plasticity. Mothball odor.		Solvay Waste
			2-3-4-2	7			SOLW	Top 8 inches: Wet, loose, dark gray, medium-fine SAND, some silt-like grains. Well sorted. Mothball odor. Bottom 8 inches: Wet, very soft, greenish-gray, silt-like grains, some medium-fine sand-like grains. Low plasticity. Mothball odor.		
10			WR-WR-WR-WR	0			SOLW	Wet, very soft, light gray and gray silt-like grains. Low plasticity. Mothball and a slight sulfur like odor.		
			WR-WR-WR-WR	0			SOLW	Wet, very soft, light gray and gray silt-like grains. Low plasticity. Mothball and a slight sulfur like odor.		
15			2-2-WR-WR	2			SP	Top 2 inches: Wet, very soft, silt-like grains (SOLW). Bottom 18 inches: Wet, loose, gray, medium-fine SAND, little shells, trace silt. Low plasticity. Sulfur odor (ML)		MARL
16										

BORING LOG	Page 2 of 2	Site: Onondaga Lake (Syracuse NY)
Honeywell		Boring No: OL-SB-10118 Date: 04/26/2007 Weather: Cloudy 60 deg F

Northing: 1117843.24 Easting: 923476.58 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 28.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WR-WR-WR-WR	0			ML	Wet, very soft, gray, SILT, some fine sand, little shells. Low plasticity. Slight sulfur odor.		
			WR-WR-WR-WR	0			ML	Wet, very soft, gray, SILT, some fine sand, little shells. Low plasticity. Slight sulfur odor.		
20			WR-WR-WR-WR	0	0		ML	Wet, very soft, gray, SILT, little fine sand, little shells. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0	7.7		ML	Wet, very soft, gray SILT, little fine sand, little shells. Isolated NAPL stringer 2 to 4 inches from the bottom. Low plasticity. Sulfur and petroleum like odors.		MARL
25			WR-WR-WR-WR	0	593		ML	Wet, very soft, gray, SILT, some fine sand, little shells. NAPL saturated 5 to 16 inches from the bottom. Low plasticity. Sulfur and petroleum like odors.		
28.0			WR-WR-WR-WR	0	636		ML	Wet, very soft, gray, SILT, some fine sand, little shells. NAPL saturated 0 to 6 inches and from 12 to 24 inches from the top. Low plasticity. Petroleum like odor.		

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10119
Date: 04/27/2007
Weather: Cloudy 60 deg F

Northing: 1117847.79	Drilling Company: PARRATT WOLFF INC	Total Depth: 30.0 FT
Easting: 923504.34	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			15-2-1-2	3	12.1		SOLW	Top 5 inches: Wet, loose, dark gray and red (brick), coarse-medium-fine SAND, some fine gravel. Poorly sorted (Fill). Bottom 11 inches: Wet, very soft, gray, silt-like grains. Some cemented layers. Low plasticity. Mothball odor.		Solvay Waste
			6-4-3-2	7	10.4		SOLW	Top 3 inches: Wet, very soft, gray, silt-like grains. Some cemented layers. Low plasticity. Mothball odor. Bottom 4 inches: Wet, loose, alternating gray and dark gray sand-like grains in cemented layers. Well sorted. Mothball odor.		
5			2-2-2-2	4	4.2		SOLW	Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		
			1-2-1-2	3	6.5		SOLW	Top 3 inches: wet, loose, light and dark gray medium-fine sand-like grains. Pin-size NAPL 8 inches from the bottom. Poorly sorted. Bottom 8 inches: Wet. very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		
			WR-WR-2-2	2	3.9		SOLW	Wet, very soft, light gray, silt-like grains; sand-like grained seams 0 to 2 inches, 4 to 4.5 inches, and 8 to 11 inches from the bottom. Sand-like seams are saturated with NAPL. Low plasticity. Mothball and petroleum like odors.		
10			WR-WR-WR-2	0	9.7		SOLW	Wet, very soft, alternating gray, greenish-gray, and dark gray silt-like grains. Dark gray seams 3 to 6 inches, 10 to 18 inches, and alternating 18 to 24 inches from the bottom are saturated with NAPL. Low plasticity. Mothball and petroleum like odors.		
12										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10119
Date: 04/27/2007
Weather: Cloudy 60 deg F

Northing: 1117847.79 Easting: 923504.34 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 30.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
12			2-4-3-2	7	15.8		SOLW	Top 8 inches: Wet, very soft, dark gray, silt-like grains. Pin-size NAPL throughout. 8 to 15 inches: Wet, loose, dark gray, sand-like grains. Pin-size NAPL throughout. Bottom 15 to 24 inches: Wet, soft, alternating light gray silt-like grains and dark gray sand-like grains. NAPL in coarser grained layers. Mothball and petroleum like odors.		Solvay Waste
15			WH-WH-WH-WH	0	0		SOLW	Wet, very soft, light gray and dark gray, silt-like grains. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	0		SOLW	Wet, very soft, light gray and grayish-green silt-like grains. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	0		SOLW	Top 12 inches: Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor. Bottom 12 inches: Wet, very soft, dark gray, silt-like grains. Low plasticity. Mothball odor.		
20			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray, SILT, some fine sand, little shells. Fine sand seam 6 to 8 inches from the bottom. Low plasticity. Sulfur odor.		Marl
			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray SILT, some fine sand, little shells. Dark gray seam 2 inches from the top. Low plasticity. Sulfur odor.		
24										

BORING LOG	Page 3 of 3	Site: Onondaga Lake (Syracuse NY) Boring No: OL-SB-10119 Date: 04/27/2007 Weather: Cloudy 60 deg F
Honeywell		

Northing: 1117847.79 Easting: 923504.34 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 30.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
24 25			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray, SILT, some fine sand, little shells. Low plasticity. Sulfur odor.		
			WH-WH-WH-WH	0	89.7		ML	Wet, very soft, gray SILT, some fine sand, little shells. Bottom 12 inches is saturated with NAPL. Low plasticity. Sulfur and petroleum like odors.		Marl
30.0			WH-WH-WH-WH	0	601		ML	Wet, very soft, gray SILT, some fine sand, little shells. Bottom 12 inches is saturated with NAPL. Low plasticity. Petroleum like odors.		

Null field readings indicate a reading was not taken.

BORING LOG	Page 1 of 2	Site: Onondaga Lake (Syracuse NY)
Honeywell		Boring No: OL-SB-10120 Date: 05/01/2007 Weather: Cloudy 55 deg F

Northing: 1117818.00 Easting: 923573.00 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 36.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			1-1-1-1	2	12.2		SOLW	Wet, very soft , alternating light and dark gray, silt-like grains, little sand-like grains. Calcified pieces in the top. Some cemented layers. Low plasticity. Mothball odor.		
			1-WH-WH-WH	0	8.2		SOLW	Wet. very soft , alternating light and dark gray, silt-like grains, little sand-like grains. Calcified pieces in the top. Some cemented layers. Isolated NAPL stringers 2 to 5 inches from the bottom in the coarser layers. Low plasticity. Sulfur odor.		
5			1-1-2-2	3	2.8		SOLW	Wet, very soft, light gray, silt-like grains. trace darker gray silt-like grains. Some cemented layers. low plasticity. Mothball odor.		
			1-2-1-2	3	12.6		SOLW	Wet, very soft, light gray, silt-like grains. trace darker gray silt-like grains. Some cemented layers. low plasticity. Mothball odor.		
			1-1-1-1	2	0.3		SOLW	Wet, loose, light and dark gray sand-like grain, some silt-like grains. Some cemented layers. Pin-size NAPL in the bottom. Well sorted. Mothball odor.		Solvay Waste
10			1-1-2-2	3	6.5		SOLW	Wet. very soft, greenish-gray, silt-like grains, some medium-fine sand-like grains. NAPL saturated 4 to 6 inches and 13 to 18 inches from the top. Low plasticity. Mothball odor.		
			2-2-2-2	4			SOLW	No recovery.		
15			WR-WR-WR-WR	0	0.5		SOLW	Top 11 inches: Wet, very soft, grayish-blue/green, silt-like grains, little fine sand-like grains. Low plasticity. Mothball odor. Bottom 11 inches: Wet, very soft, dark gray, silt-like grains, little fine sand-like grains. Low plasticity. Mothball odor		
			WR-WR-WR-WR	0	1.1		SOLW	Top 11 inches: Wet, very soft, dark gray, silt-like grains, little fine sand-like grains. Low plasticity. Mothball odor. Bottom 13 inches: Wet, very soft, light grayish-green, silt-like grains. Low plasticity. Mothball odor.		
18										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10120
Date: 05/01/2007
Weather: Cloudy 55 deg F

Northing: 1117818.00
Easting: 923573.00
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 36.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
18			WR-WR-WR-WR	0	0.7		SOLW	Top 4 inches: Wet, loose, light and dark gray fine sand-like grains, some silt-like grains. well sorted. Mothball odor. Bottom 11 inches: Wet, very soft, light grayish-green,silt-like grains. Gray colored grains in bottom 1 inch.Low plasticity. Mothball odor.		Solvay Waste
20			WR-WR-WR-WR	0	0.3		ML	Top 3 inches: Wet, very soft, gray, silt-like grains. Low plasticity (SOLW). Bottom 17 inches: Wet, very soft, gray, SILT and fine Sand, little shells. Low plasticity. Sulfur odor (ML).		
			WR-WR-WR-WR	0	1.8		ML	Top 6 inches: Wet, very soft, gray, SILT and fine Sand, little shells. Low plasticity. Sulfur odor. Bottom 16 inches: Wet, very soft, gray, SILT, some fine sand, little shells. Low plasticity. Sulfur odor.		
25			WR-WR-WR-WR	0	8.2		ML	Wet, very soft, gray, SILT, some fine sand, little shells. wood fragment 12 to 13 inches from the bottom. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0	12.8		ML	Wet, very soft, gray, SILT, some fine sand, little shells. NAPL saturated in the shoe. Low plasticity. Mothball odor.		Marl
			WR-WR-WR-WR	0	10.4 3.4		ML	Wet, very soft, gray, SILT, little fine sand, little shells. Finer grained towards the bottom. Low plasticity. Petroleum like odor in the top 6 inches. Bottom 18 inches has a sulfur odor.		
30			WH-WH-WH-WH	0	0		ML/CL	Wet, very soft, gray, SILT and Clay, trace shells. Low plasticity. Sulfur odor		
			WH-WH-WH-WH	0	0		ML/CL	Wet, very soft, gray, SILT and Clay, trace shells. Low plasticity. Sulfur odor		
35			WH-WH-WH-WH	0	0		CL	Wet, very soft, red/brown, CLAY, little silt. Low plasticity.		Clay
36.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10121
Date: 05/02/2007
Weather: Clear 55 Deg F

Northing: 1117794.13	Drilling Company: PARRATT WOLFF INC	Total Depth: 42.0 FT
Easting: 923614.32	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			WH-WH-1-1	1				No recovery.		
			1-2-3-3	5	10.8		SOLW	Wet, very soft, dark gray transitioning to lighter gray towards the bottom, silt-like grains, some cemented layers. Low plasticity. Mothball odor.		
5			WH-2-1-1	3	6.8		SOLW	Wet, very soft, alternating light and dark gray, silt-like grains, little fine sand-like grains, some cemented layers. NAPL stringer in the bottom 2 inches. Low plasticity. Mothball odor.		
			1-1-2-2	3	2.5		SOLW	Wet, very soft, alternating light and dark gray silt-like grains. NAPL globule at 12 inches. Low plasticity. Mothball odor.		
			1-2-1-1	3	4.5		SOLW	Wet, very soft, light gray, silt-like grains. NAPL seams at 9 inches, 15 inches, and 17 inches from the top. Low plasticity. Mothball odor.		Solvay Waste
10			WH-WH-WH-WH	0	2.3		SOLW	Top 14 inches: Wet, very soft, light gray, silt-like grains. Pin-size NAPL in the top 6 inches. Low plasticity. Mothball odor. Bottom 7 inches: Wet, very soft, light and dark gray, sand-like grains, little silt-like grains. Well sorted. Mothball odor.		
			WH-WH-WH-WH	0	4.5		SOLW	Wet, very soft light and dark gray, silt-like grains and sand-like grains. Pin-size NAPL in the top 3 inches. Low plasticity. Mothball odor.		
15			WH-WH-WH-WH	0	4.4		SOLW	Wet, very soft, light gray, silt-like grains, darker grained in top 6 inches. Low plasticity. Mothball odor.		
16										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10121
Date: 05/02/2007
Weather: Clear 55 Deg F

Northing: 1117794.13 Easting: 923614.32 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 42.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WH-WH-WH-WH	0	1.9		SOLW	Wet, very soft, light gray, silt-like grains, darker grained with little sand-like grains in the top 2 inches. Low plasticity. Mothball odor.		Solvay Waste
			WH-WH-WH-WH	0	0.7		ML	Top 6 inches: Wet, very soft, light gray to gray, silt-like grains. Low plasticity. Mothball odor (SOLW). Bottom 18 inches: Wet, very soft, gray, SILT, some fine sand, little shells. Low plasticity. Sulfur odor (ML).		
20			WH-WH-WH-WH	0	0.6		ML	Wet, very soft, gray, SILT, some fine sand, little shells. Low plasticity. Sulfur odor.		
			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray, SILT, little fine sand, little shells. Low plasticity. Sulfur odor.		
25			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray, SILT, little fine sand, little shells. Low plasticity. Sulfur odor.		MARL
			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray, SILT, little fine sand, little shells. Low plasticity. Sulfur odor.		
			WH-WH-WH-WH	0	0		ML	Top 6 inches: Wet, very soft, gray, SILT, little fine sand, little shells. Low plasticity. Sulfur odor. Bottom 18 inches: Wet, very soft, gray, SILT, little clay, trace shells. Low plasticity. Sulfur odor.		
30			WH-WH-WH-WH	0	0		ML	Top 18 inches: Wet, very soft, gray, SILT, little clay, trace shells. Low plasticity. Sulfur odor (ML). Bottom 6 inches: Wet, very soft, red/brown CLAY and Silt, little find sand in the bottom. Low plasticity (CL/ML).		
32										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10121
Date: 05/02/2007
Weather: Clear 55 Deg F

Northing: 1117794.13
Easting: 923614.32
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 42.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
32			WH-WH-WH-WH	0	0		CL	Top 6 inches: Wet, very soft, red/brown, CLAY and Silt, little to some fine sand. Low plasticity (CL/ML). Bottom 10 inches: Wet, very soft, red/brown CLAY, little silt, trace shells. Low to medium plasticity (CL).		MARL
35			WH-WH-2-2	2	0		CL	Wet, very soft, red/brown CLAY, some silt. Medium to low plasticity.		Clay
								GUS Sample		
								GUS Sample. Poor recovery. Sample discarded.		
40		OL-0317-02						GUS Sample. See geotechnical report for analysis.		
42.0										

Null field readings indicate a reading was not taken.

BORING LOG	Page 1 of 2	Site: Onondaga Lake (Syracuse NY)
Honeywell		Boring No: OL-SB-10122
		Date: 05/03/2007
		Weather: Clear 50 deg F

Northing: 1117840.64	Drilling Company: PARRATT WOLFF INC	Total Depth: 28.0 FT
Easting: 923574.97	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			5-4-2-2	6	56.1		SOLW	Top 3 inches: Brick and calcified SOLW. Bottom 6 inches: wet, very soft, light gray silt-like grains, cemented 3 to 6 inches from top. Low plasticity. Mothball odor.		
			3-2-2-3	4	6.3		SOLW	Wet, very soft and loose, alternating gray and light gray silt-like and light and dark gray sand-like grains. Cemented layers. Low plasticity/well sorted. Mothball odor.		
5			5-5-4-2	9	8.9		SOLW	Wet, loose, dark gray medium-fine sand-like grains. Some light gray silt-like grains. NAPL stringers throughout. Well sorted. Mothball and petroleum odors.		
			4-3-3-3	6	12.8		SOLW	Top 7 inches and bottom 4 inches: wet, loose, light and dark gray sand-like grains. Some light gray silt-like grains. Well sorted. Mothball odor. Middle 7 to 16 inches: wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		Solvay Waste
			4-3-2-3	5			SOLW	No recovery.		
10			WH-WH-1-1	1	16.4		SOLW	Wet, very soft, light gray silt-like grains. Coarser dark gray seams containing NAPL 6 to 8 inches from the top. Mothball and petroleum odors.		
			4-4-3-2	7	3.6		SOLW	Wet, very soft, light gray silt-like grains, trace darker gray grains. Low plasticity. Mothball odor.		
15			WH-WH-WH-WH	0	1.3		SOLW	Wet, very soft, light gray, silt-like grains. Top 4 inches are darker gray and cemented. Low plasticity. Mothball odor.		
16										

BORING LOG	Page 2 of 2	Site: Onondaga Lake (Syracuse NY)
Honeywell		Boring No: OL-SB-10122 Date: 05/03/2007 Weather: Clear 50 deg F

Northing: 1117840.64 Easting: 923574.97 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 28.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WH-WH-WH-WH	0	0.5		SOLW	Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		Solvay Waste
			WH-WH-WH-WH	0	1.6 4.3		SOLW/ML	Top 12 inches: wet, very soft, light gray, silt-like grains, some fine sand-like grains. Low plasticity. Mothball odor (SOLW). Bottom 12 inches: wet, very soft, gray SILT, some fine sand, little shells. Low plasticity. Sulfur odor (ML)		
20			WH-WH-WH-WH	0	2.3		ML	Wet, very soft, gray SILT, little fine sand, little shells. Low plasticity. Sulfur odor.		Marl
			WH-WH-WH-WH	0	2.8		ML	Wet, very soft, gray SILT, little fine sand, little shells. Low plasticity. Sulfur odor.		
25			WH-WH-WH-WH	0	12.3		ML	Wet, very soft, gray SILT, little fine sand, little shells. NAPL saturated in bottom 2 inches. Low plasticity. Petroleum odor.		
28.0			WH-WH-WH-WH	0	2268		ML	Wet, very soft, gray, SILT, some fine sand. NAPL saturated. Low plasticity. Petroleum odor.		

Null field readings indicate a reading was not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10123
Date: 05/03/2007
Weather: Clear 55 deg F

Northing: 1117890.13 Easting: 923515.16 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 44.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			2-1-2-4	3	1.4		SOLW	Wet, soft, light gray, cemented silt-like grains. Light and dark gray fine sand-like grains in bottom 2 inches. Low plasticity. Mothball odor. Zebra mussel shells on top.		
			WH-WH-2-3	2	2.7		SOLW	Wet, very soft, light gray silt-like grains, little dark gray sand-like grains. NAPL lenses 4 inches from top and at bottom. Some cemented layers. Low plasticity. Mothball odor.		
5			2-3-1-1	4	1.7		SOLW	Wet, loose, light and dark gray fine sand-like grains and light gray silt-like grains. Cemented layers. Coarser grained towards bottom. NAPL in bottom 2 inches. Well sorted/low plasticity. Mothball odor.		
			2-2-1-1	3	3.8		SOLW	Top 8 inches: wet, very soft, light gray, silt-like grains. Some cemented layers. NAPL lens in bottom 1 inch. Low plasticity. Mothball odor. Bottom 8 inches: wet, loose, light and dark gray fine sand-like grains, little silt-like grains. NAPL saturated. Well sorted. Mothball odor.		Solvay Waste
			2-1-2-1	3			SOLW	No recovery.		
10			WH-WH-WH-WH	0	1.8		SOLW	Wet, very soft, light gray, silt-like grains. NAPL stringers 5 inches from bottom. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	2.6		SOLW	Wet, very soft, light gray, silt-like grains. Occasional gray lenses. Low plasticity. Mothball odor.		
15			WH-WH-WH-WH	0	0.4		SOLW	Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		
16										

BORING LOG Honeywell	Site: Onondaga Lake (Syracuse NY) Boring No: OL-SB-10123 Date: 05/03/2007 Weather: Clear 55 deg F

Northing: 1117890.13 Easting: 923515.16 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 44.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WH-WH-WH-WH	0	1.3		SOLW	Wet, very soft, light gray with little gray layers of silt-like grains. Low plasticity. Mothball odor. Alternating light gray and gray layers towards bottom.		Solvay Waste
			WH-WH-WH-WH	0	0		SOLW	Wet, very soft, dark gray in top 6 inches, light grayish green in bottom 12 inches, silt-like grains. Low plasticity. Mothball odor.		
20			WH-WH-WH-WH	0	0.4		SOLW	Wet, very soft, light gray and dark gray silt-like grains. Darker grains in top 2 inches. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	1.6		SOLW	Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		
25			WH-WH-WH-WH	0	0		SOLW	Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor. Darker lens in bottom.		
			WH-WH-WH-WH	0	0		SOLW	Wet, very soft, top 21 inches light gray with green lenses at top and 6 inches from top, and dark gray in bottom 3 inches, silt-like grains. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	0 0		SOLW	Top 16 inches: wet very soft, light gray, silt-like grains. Low plasticity. Mothball odor (SOLW). Bottom 8 inches: wet, very soft, gray, SILT, little clay, trace fine gravel, trace shells. Low plasticity. Organic odor (ML).		
30			WH-WH-WH-WH	0	0		ML/CL	Wet, soft, gray SILT and CLAY, trace shells. Low plasticity. Sulfur odor.		Marl
32										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10123
Date: 05/03/2007
Weather: Clear 55 deg F

Northing: 1117890.13
Easting: 923515.16
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 44.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
32			WH-WH-WH-WH	0	0		ML/CL	Wet, soft, gray SILT and CLAY, trace shells. Low plasticity. Sulfur odor.		Marl
35			WH-WH-WH-WH	0	0		ML/CL	Wet, very soft, gray CLAY and Silt, trace shells. Low to medium plasticity. Slight sulfur odor.		Marl
			WH-WH-WH-WH	0	0		ML/CL	Wet, very soft, gray CLAY and Silt, trace shells. Low to medium plasticity. Slight sulfur odor.		Marl
			WH-WH-WH-WH	0	0		ML/CL	Wet, very soft, gray CLAY and Silt, trace shells. Low to medium plasticity. Slight sulfur odor.		Marl
40			WH-WH-WH-0	0	0		CL	Top 6 inches Wet, very soft, gray CLAY and Silt, trace shells. Low to medium plasticity. Slight sulfur odor. Bottom 1.5 feet: wet, very soft, grayish-brown CLAY, little silt. Medium plasticity.		Clay
								GUS Sample		
44.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10124
Date: 05/04/2007
Weather: Clear 55 deg F

Northing: 1117850.92
Easting: 923591.26
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 44.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			2-3-1-1	4	6.2		SOLW	Wet, stiff, light and dark gray silt-like grains, little fine sand-like grains. Top 1 inch calcified. Cemented layers. Low plasticity. Mothball odor.		
			1-WH-WH-WH	0	1.8		SOLW	Wet, very soft, light and dark gray silt-like grains, trace fine sand-like grains. Cemented layers 2 to 4 inches from top. Low plasticity. Mothball odor.		
5			WH-5-1-3	6	5.1		SOLW	Wet, loose, light to dark gray, fine sand-like grains, some silt-like grains. All silt-like grains bottom 2 inches. Well sorted. Mothball odor.		
			2-2-2-2	4	6.3		SOLW	Wet, very soft, light gray, silt-like grains. Seam of light and dark fine sand-like grains 4 to 5 inches from top. Low plasticity. Mothball odor.		
			1-2-1-1	3	4.2		SOLW	Wet, very soft, light gray/white silt-like grains. Low plasticity. Mothball odor.		Solvay Waste
10			WH-WH-WH-WH	0	4.7		SOLW	Wet, very soft, light gray/white silt-like grains. Top 3 inches coarser grains. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	6.1		SOLW	Wet, very soft, light gray/white silt-like grains, trace gray grains. Low plasticity. Mothball odor.		
15			WH-WH-WH-WH	0	1.2		SOLW	Wet, very soft, light gray, silt-like grains, trace gray grains in thin lenses. NAPL stringer 6 inches from top. Low plasticity. Mothball odor.		
16										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10124
Date: 05/04/2007
Weather: Clear 55 deg F

Northing: 1117850.92	Drilling Company: PARRATT WOLFF INC	Total Depth: 44.0 FT
Easting: 923591.26	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WH-WH-WH-WH	0	5		SOLW	Wet, very soft, light gray to dark gray silt-like grains. NAPL saturated bottom 7 inches (darker grains). Low plasticity. Mothball and petroleum odors.		Solvay Waste
			WR-WR-WR-WR	0	1.5		SOLW	Wet, very soft, light gray to gray, silt-like grains. Top 2 inches NAPL saturated (darker grains). Mothball and petroleum odors.		
20			WH-WH-WH-WH	0	1.5		SOLW	Wet, very soft, light gray to dark gray silt-like grains. Darker grained intervals 4 to 5 inches and from 12 to 24 inches from the top. Darker areas have petroleum odor. Low plasticity.		
			WR-WR-WR-WR	0	1.3		SOLW	Wet, very soft, dark to light gray silt-like grains. Top 10 inches is darker grained and has petroleum odor. Lighter grains have mothball odor. Low plasticity.		
25			WR-WR-WR-WR	0	0.6		SOLW	Wet. very soft, light gray with darker gray lenses from 16 to 19 inches from top, silt-like grains, trace darker grains in top 3 inches. Low plasticity. Dark lenses have a petroleum odor. Remainder has mothball odor.		
			WR-WR-WR-WR	0	0		SOLW	Wet, very soft, light gray silt-like grains. Low plasticity. Mothball odor.		
			WR-WR-2-2	2	0.2 0		SOLW	Top 14 inches: wet, very soft light to dark gray silt-like grains. Low plasticity. Mothball odor (SOLW). Bottom 10 inches: wet, very soft, gray SILT, little clay, little shells. Low plasticity. Sulfur odor (ML).		
30			WR-WR-WR-WR	0	0		ML	Wet, very soft, gray SILT, little clay, trace shells. Low plasticity. Sulfur odor.		Marl
32										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10124
Date: 05/04/2007
Weather: Clear 55 deg F

Northing: 1117850.92 Easting: 923591.26 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 44.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
32			2-2-2-2	4	0.4		CL/ML	Wet, very soft, gray CLAY and Silt, trace shells. Low to medium plasticity. Sulfur odor.		Marl
35			WH-WH-WH-WH	0	0		CL/ML	Wet, very soft, gray CLAY and Silt, trace shells. Low plasticity. Sulfur odor.		
			WH-WH-WH-WH	0	0		CL/ML	Wet, very soft, gray CLAY and Silt, thin black silt lenses in bottom 7 inches. Low to medium plasticity. Sulfur odor.		
			WH-WH-WH-WH	0	0		CL/ML	Wet, very soft, gray CLAY and Silt, thin black silt lenses throughout. Low to medium plasticity. Sulfur odor.		
40			WH-WH-WH-WH	0	0		CL	Wet, very soft, red/brown CLAY, little silt, thin black silt lenses throughout. Medium plasticity.		Clay
		OL-0317-03						GUS Sample. See geotechnical report for analysis.		
44.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10125
Date: 05/07/2007
Weather: Clear 50 deg F

Northing: 1117864.09 Easting: 923592.56 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 44.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			2-2-1-2	3	33.7		SOLW	Wet, stiff, light to dark gray silt-like grains, bottom 3 inches, fine sand-like grains with petroleum odor. Cemented layers. Low plasticity. Mothball and petroleum odors.		
			2-1-1-1	2	10.7		SOLW	Wet, stiff, light gray silt-like grains, little dark and light gray fine sand-like grains in layers. Some cemented layers. Mothball odor.		
5			10-14-10-8	24	10.1		SOLW	Wet, loose, light and dark gray fine sand-like grains, some light gray silt-like grains. Well sorted. Mothball odor.		
			8-7-7-6	14	0.3		SOLW	Wet, loose, light and dark gray fine sand-like grains, some light gray silt-like grains. Well sorted. Mothball odor.		
			2-2-2-2	4	1.5		SOLW	Top 2 inches: wet, loose, gray and dark gray fine sand-like grains. Well sorted. Petroleum odor. Bottom 17 inches: wet, very soft, light gray silt-like grains. Low plasticity. Mothball odor.		Solvay Waste
10			WR-WR-WR-WR	0	2.8		SOLW	Wet, very soft, light gray/white silt-like grains, trace fine sand-like grains. Low plasticity. Mothball odor.		
			WR-WR-WR-WR	0	4.4		SOLW	Wet, very soft, light gray/white, silt-like grains, gray silt-like grained seams. Low plasticity. Mothball odor.		
15			WR-WR-WR-WR	0	2.8		SOLW	Wet, very soft, light gray/white, silt-like grains, gray silt-like grained seams. Dark gray seam bottom 1 inch. Low plasticity. Mothball odor.		
16										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10125
Date: 05/07/2007
Weather: Clear 50 deg F

Northing: 1117864.09	Drilling Company: PARRATT WOLFF INC	Total Depth: 44.0 FT
Easting: 923592.56	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WR-WR-WR-WR	0	4		SOLW	Wet, very soft, gray to light gray silt-like grains. NAPL lens 5 inches from top. Low plasticity. Mothball and petroleum odors.		
			WR-WR-WR-WR	0	1.2		SOLW	Wet, very soft, light gray with gray to dark gray lenses, silt-like grains. Low plasticity. Mothball odor.		
20			WR-WR-WR-WR	0	1.1		SOLW	Wet, very soft, gray to black to light gray, silt-like grains. Gray grains 0 to 4 inches, black grains 4 to 12 inches, light gray grains 12 to 24 inches. Black grains have sewage-like odor. Remainder has mothball odor. Low plasticity.		
			WR-WR-WR-WR	0	0.4		SOLW	Wet, very soft, gray to black to light gray, silt-like grains. Gray grains 0 to 3 inches, black grains 3 to 6 inches, light gray grains 6 to 24 inches. Low plasticity. Mothball odor.		Solvay Waste
25			WR-WR-WR-WR	0	1.4		SOLW	Wet, very soft, light gray silt-like grains, light and dark gray fine sand-like grained seam 8 to 9 inches from top. Low plasticity. Mothball odor.		
			WR-WR-WR-WR	0	3.2		SOLW	Wet, very soft, light gray to dark gray silt-like grains. Bottom 6 inches: dark gray grains, trace shells in bottom of spoon. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	1		SOLW	Wet, very soft, light gray to gray silt-like grains, darker gray grains in bottom 2 inches. Low plasticity. Mothball odor.		
30			WH-WH-WH-WH	0	0.1		ML	Wet, very soft, gray, SILT, trace shells. Low plasticity. Sulfur odor.		Marl
32										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10125
Date: 05/07/2007
Weather: Clear 50 deg F

Northing: 1117864.09
Easting: 923592.56
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 44.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
32			WH-WH-WH-WH	0	0.3		ML/CL	Wet, very soft, gray, SILT and Clay, trace shells. Low plasticity. Sulfur odor.		
35			WH-WH-WH-WH	0	0		ML/CL	Wet, very soft, gray, SILT and Clay, trace shells. Low plasticity. Sulfur odor.		Marl
			WH-WH-WH-WH	0	0		ML/CL	Wet, very soft, gray, SILT and Clay, trace shells. Low plasticity. Sulfur odor.		
			WH-WH-WH-WH	0	0		CL	Top 4 inches: wet, very soft, gray, SILT and Clay, trace shells. Low plasticity. Sulfur odor (ML/CL). Bottom 20 inches: wet, very soft, red/brown CLAY, little silt. Low to medium plasticity (CL).		Clay
40								GUS Sample		
								GUS Sample		
44.0										

Null field readings indicate a reading was not taken

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10126
Date: 05/07/2007
Weather: Clear 65 deg F

Northing: 1117884.17
Easting: 923386.19
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 26.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			2-2-2-2	4	50.7		SOLW	Wet, medium stiff, light gray silt-like grains, some gray and dark gray fine sand-like grains. Dark sand lens 2 inches from bottom. Cemented layers. Low plasticity. Mothball odor.		
			2-2-7-7	9			SOLW	Wet, medium stiff, gray silt-like grains, some gray and dark gray fine sand-like grains. Coarser grains in bottom 7 inches. Cemented layers. Low plasticity. Mothball odor.		
5			2-2-1-1	3			SOLW	No Recovery.		
			1-2-3-3	5	10.1		SOLW	Wet, very soft, light gray silt-like grains, some dark gray fine sand-like grained layers in bottom 6 inches. NAPL stringer at 7 inches from top. Low plasticity. Mothball odor.		
			4-3-2-1	5			SOLW	No Recovery.		Solvay Waste
10			2-2-WH-WH	2	5.7		SOLW	Wet, very soft, light gray/white silt-like grains, pin-size NAPL 3 inches from bottom. Low plasticity. Mothball odor.		
			WR-WR-WR-WR	0	1.5		SOLW	Wet, very soft, light gray/white silt-like grains. Low plasticity. Mothball odor.		
15			WR-WR-WR-WR	0	2		SOLW	Wet, very soft, light gray/green silt-like grains. Low plasticity. Mothball odor.		
16										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10126
Date: 05/07/2007
Weather: Clear 65 deg F

Northing: 1117884.17
Easting: 923386.19
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 26.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WR-WR-WR-WR	0	4.7		SOLW	Wet, very soft, light gray/white, silt-like grains. Small NAPL stringer 9 inches from top. Low plasticity. Mothball odor.		Solvay Waste
			WR-WR-WR-WR	0	26		SOLW	Wet, very soft, light gray/white, silt-like grains. Low plasticity. Mothball odor.		
20			WR-WR-WR-WR	0	54.4		SOLW	Wet, very soft, light gray/white, silt-like grains. Low plasticity. Mothball odor.		
			2-2-WR-WR	2	70.7 2445		SOLW	Top 18 inches: wet, very soft, light gray to gray silt-like grains, darker grained lens at 12 inches and from 16 to 18 inches from top. Low plasticity. Mothball odor (SOLW). Bottom 6 inches: wet, very soft, gray SILT, some fine sand, trace shells. NAPL saturated. Low plasticity. Petroleum odor.		
25			WR-WR-WR-WR	0	1825		ML	Wet, very soft, gray SILT some fine sand, trace shells. NAPL saturated. Low plasticity. Petroleum odor.		Marl
26.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10127
Date: 05/08/2007
Weather: Clear 60 deg F

Northing: 1117868.23
Easting: 923510.67
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 42.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			2-3-2-2	5	12.3		SOLW	Wet, medium stiff, light gray and gray, silt-like grains, little dark gray fine sand-like grains, fine sand-like grained lens 3 to 4 inches from top. Low plasticity. Mothball odor.		
			1-2-1-2	3	20.3		SOLW	Wet, medium stiff light gray and gray silt-like grains, little gray fine sand-like grains. Top 5 inches coarser grained with pin sized NAPL. Red/brown silt-like grains 11 to 15 inches from the top. Low plasticity. Mothball odor.		
5			2-1-1-1	2	11.2		SOLW	Wet, very soft, light gray and gray silt-like grains, little gray and dark gray fine sand-like grains. Sand lens 3 to 5 inches from top. Low plasticity. Mothball odor.		
			1-1-1-1	2	6.6		SOLW	Wet, very soft, light gray silt-like grains, trace gray and dark gray fine sand-like grains. Sand lens 18 to 19 inches from top. Low plasticity. Mothball odor.		
			2-1-WH-WH	1	7.9		SOLW	Wet, very soft, light gray/white silt-like grains, trace dark gray silt-like grains. Low plasticity. Mothball odor.		Solvay Waste
10			WR-WR-WR-WR	0	3.9		SOLW	Wet, very soft, light gray with little gray silt-like grains, trace gray fine sand-like grains. Pin-sized NAPL at 12 and 15 inches from top. Low plasticity. Mothball odor.		
			WR-WR-WR-WR	0	3.7		SOLW	Wet, very soft, light gray/white silt-like grains. Low plasticity. Mothball odor.		
15			WR-WR-WR-WR	0	2.6		SOLW	Wet, very soft, light gray silt-like grains, trace fine sand-like grains. Low plasticity. Mothball odor.		
16										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10127
Date: 05/08/2007
Weather: Clear 60 deg F

Northing: 1117868.23
Easting: 923510.67
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 42.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WR-WR-WR-WR	0	4.8		SOLW	Wet, very soft, light gray to gray, silt-like grains, darker grained in the bottom 8 inches and slightly cemented. Low plasticity. Mothball odor.		Solvay Waste
			WR-WR-WR-WR	0	1.7		SOLW	Wet, very soft, gray to dark gray to light gray, silt-like grains. Gray grains 0 to 5 inches, dark gray 5 to 10 inches light gray, 10 to 18 inches. Darker grains are slightly cemented. Low plasticity. Mothball odor.		
20			WR-WR-WR-WR	0	1.9		SOLW	Wet, very soft, light gray silt-like grains. Low plasticity. Mothball odor.		
			WR-WR-WR-WR	0	3.2		SOLW	Wet, very soft, grayish-green to light grayish green silt-like grains. Top 9 inches grayish green grains, bottom 15 inches light grayish green. Low plasticity. Mothball odor.		
25			WR-WR-WR-WR	0	0.6		SOLW	Wet, very soft, light gray silt-like grains, trace gray grains in bottom. Low plasticity. Mothball odor.		
			WR-WR-WR-WR	0	1.4		SOLW	Wet, very soft, light gray to dark gray silt-like grains. Darker grains in bottom 2 inches and are slightly cemented. Lenses of darker grains at 6, 8, 15, and 18 inches. Low plasticity. Mothball odor.		
			1-WH-WH-WH	0	0.3 0.5		ML/CL	Top 8 inches: wet, very soft, light gray silt-light grains. Low plasticity. Mothball odor (SOLW). Bottom 16 inches: wet, soft, gray SILT and CLAY, trace shells. Low plasticity. Sulfur odor (ML/CL).		Marl
30			WR-WR-WR-WR	0	0		ML/CL	Wet, soft, gray, SILT and CLAY, trace shells. Low plasticity. Sulfur odor.		
32										

BORING LOG	Page 3 of 3
Honeywell	Site: Onondaga Lake (Syracuse NY) Boring No: OL-SB-10127 Date: 05/08/2007 Weather: Clear 60 deg F

Northing: 1117868.23 Easting: 923510.67 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 42.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
32			WR-WR-WR-WR	0	0		ML/CL	Wet, soft, gray, SILT and CLAY, trace shells. Low plasticity. Sulfur odor.		Marl
35			WR-WR-WR-WR	0	0		CL/ML	Wet, soft, gray CLAY and Silt, trace shells. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0	0 0		CL/ML	Top 20 inches: Wet, soft, gray CLAY and Silt, trace shells. Low plasticity. Sulfur odor (CL/ML). Bottom 4 inches: wet, soft, red/brown and black CLAY, little silt. Low to medium plasticity (CL).		
			WR-WR-WR-WR	0	0		CL	Wet, soft, red/brown CLAY, little silt. Low to medium plasticity.		Clay
40								GUS Sample		
42.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10128
Date: 05/09/2007
Weather: Partly Cloudy 60 deg F

Northing: 1117832.55	Drilling Company: PARRATT WOLFF INC	Total Depth: 42.0 FT
Easting: 923602.76	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			1-1-1-1	2	57.5		SOLW	Wet, soft, light gray and gray silt-like grains. Cemented layers. Top 1 inch calcified. Low plasticity. Mothball odor.		
			5-3-3-2	6	44.3		SOLW	Wet, very soft, light gray and gray silt-like grains, little fine sand-like grains, fine sand lens 11 inches from top. NAPL stringer 2 inches and 12 inches from top. Pin-size NAPL 8 inches from top. Low plasticity. Mothball odor.		
5			4-2-3-2	5	10.9		SOLW	Wet, very soft, light gray and gray silt-like grains, trace fine sand-like grains. Pin-sized NAPL in top 3 inches. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0	14.3		SOLW	Wet, very soft, light gray with trace dark gray silt-like grains. Low plasticity. Mothball odor.		
			WH-WH-WH-WH	0			SOLW	No Recovery		Solvay Waste
10			WR-WR-WR-WR	0	3.8		SOLW	Top 6 inches: wet, hard, light gray and dark gray fine sand-like grains, some silt-like grains. Well sorted. Mothball odor. Bottom 18 inches: wet, very soft, light gray/white silt-like grains, gray seam 20 inches from top. Low plasticity. Mothball odor.		
			WR-WR-WR-WR	0	4.6		SOLW	Wet, very soft, light gray/white silt-like grains, trace darker gray fine sand-like grains. Darker silt lenses at 6 and 18 inches from top. Low plasticity. Mothball odor.		
15			WR-WR-WR-WR	0	8.9		SOLW	Top 17 inches: wet, very soft, gray silt-like grains, trace fine sand-like grains. Low plasticity. Petroleum odor. Bottom 4 inches: wet, very soft, dark gray silt-like grains. Some cementations, trace friable organics. Low plasticity. Petroleum odor.		
16										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-10128
Date: 05/09/2007
Weather: Partly Cloudy 60 deg F

Northing: 1117832.55	Drilling Company: PARRATT WOLFF INC	Total Depth: 42.0 FT
Easting: 923602.76	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WR-WR-WR-WR	0	12.3		SOLW	Wet, very soft, gray and dark gray silt-like grains. Some slight cementations. Low plasticity. Petroleum odor.		Solvay Waste
			WR-WR-WR-WR	0	1.8		SOLW	Wet, very soft, light gray silt-like grains, trace dark gray fine sand-like grains. Low plasticity. Mothball odor.		
20			WR-WR-WR-WR	0	1.7		SOLW	Wet, very soft, gray, silt-like grains, trace darker grains. Low plasticity. Mothball odor.		
			WR-WR-WR-WR	0	3.4		SOLW	Top 22 inches: wet, very soft, gray to dark gray silt-like grains. Low plasticity. Mothball and sulfur odor (SOLW). Bottom 2 inches: wet, very soft, gray SILT, little shells. Low plasticity. Sulfur odor (ML).		
25			WR-WR-WR-WR	0	3.3		ML	Wet, very soft, gray, SILT, little clay, trace shells. Low plasticity. Sulfur odor.		Marl
			WR-WR-WR-WR	0	1.6		ML	Wet, very soft, gray SILT, some clay, trace shells. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0	2.5		ML	Wet, very soft, gray SILT, some clay, trace shells. Low plasticity. Sulfur odor.		
30			WR-WR-WR-WR	0	0		ML/CL	Wet, very soft, gray SILT and Clay, trace shells. Clay content increasing with depth. Low plasticity. Sulfur odor.		
32										

BORING LOG	Page 3 of 3
Honeywell	Site: Onondaga Lake (Syracuse NY) Boring No: OL-SB-10128 Date: 05/09/2007 Weather: Partly Cloudy 60 deg F

Northing: 1117832.55 Easting: 923602.76 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 42.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
32			WR-WR-WR-WR	0	0		ML/CL	Wet, very soft, gray SILT and clay, trace shells. Clay content increasing with depth. Low plasticity. Sulfur odor.		Marl
35			WR-WR-WR-WR	0	0 0		CL	Top 8 inches: Wet, very soft, gray SILT and clay, trace shells. Clay content increasing with depth. Low plasticity. Sulfur odor. Bottom 16 inches: wet, very soft, red/brown CLAY, little silt. Low plasticity.		Marl / Clay
			WR-WR-WR-WR	0	0		CL	Wet, very soft, red/brown CLAY, little silt. Low plasticity.		Clay
								GUS Sample		
40								GUS Sample		
42.0										

Null field readings indicate a reading was not taken.

BORING LOG	Page 1 of 3	Site: Onondaga Lake (Syracuse NY)
Honeywell		Boring No: OL-SB-20067 Date: 05/16/2007 - 05/17/2007 Weather: Cloudy, Rain 60 deg F

Northing: 1118643.88 Easting: 922416.19 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Sara Chmura, Matt Vetter Rig Type: Dierich D50	Total Depth: 48.0 Ft Water Elev: NA Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			5-7-2-5	9	0.3		ML	Wet, soft, black, SILT, some medium to fine sub angular gravel, trace fine sand, and trace shells.		Silt-gravel
			7-4-4-4	8	0		ML	Wet, soft, black, SILT, some medium to fine sub angular gravel, trace fine sand, and trace shells.		
5			3-2-5-7	7	0.7		ML	Wet, soft, black, SILT, some medium to fine sub angular gravel, trace fine sand, and trace shells. Becoming more silt and less gravel, slight petroleum-like odor.		
			7-2-1-WH	3	0		ML	Wet, soft, black, SILT, some fine to medium sub angular gravel. Bottom 2 inches is wet, soft grayish white, silt-like grains, trace fine sand, petroleum-like odor.		Solvay Waste
			WH-WH-WH-WH	0	2.7		ML	Wet, soft, light gray, SILT, some fine sand, trace clay, low plasticity, trace shells, sulfur odor.		Marl
10			WH-WH-WH-WH	0	0.3		ML	Wet, soft, light gray, SILT and fine SAND, little to trace clay, low plasticity, trace shells, sulfur odor.		
			WH-WH-WH-WH	0	0		ML	Saturated, very soft, light gray, SILT, little clay, little fine sand. Trace shells, low plasticity, sulfur odor.		
15			WR-WR-WR-WR	0	1.7		ML	Wet, soft, light gray, SILT, some fine sand, trace clay, low plasticity, trace shells, sulfur odor.		
16										

BORING LOG Honeywell	Page 2 of 3	Site: Onondaga Lake (Syracuse NY) Boring No: OL-SB-20067 Date: 05/16/2007 - 05/17/2007 Weather: Cloudy, Rain 60 deg F

Northing: 1118643.88 Easting: 922416.19 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Sara Chmura, Matt Vetter Rig Type: Dierich D50	Total Depth: 48.0 Ft Water Elev: NA Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16			WR-WR-WR-WR	0	0.6		ML	Wet, soft, light gray, SILT, some fine sand, little clay, low plasticity grading to SILT, some clay, trace shells, sulfur odor.		Marl
			WR-WR-WR-WR	0	0		ML	Wet, very soft, light gray, SILT, some clay, trace fine sand, trace shells, sulfur odor.		
20			WR-WR-WR-WR	0	0.7		ML/CL	Wet, soft, light gray, SILT, some clay grading to silt and clay, moderate plasticity, trace shells, sulfur odor.		
			WR-WR-WR-WR	0	1.3		CL	Wet, soft, light gray, SILT and CLAY, little to trace fine sand, trace shells, moderate to low plasticity, sulfur odor		
25			WR-WR-WR-WR	0	0		CL	Wet, soft, light gray grading to gray CLAY, some silt, trace fine sand, moderate plasticity, slight sulfur odor.		
			WR-WR-WR-WR	0	0		CL	Wet, soft, gray, CLAY, some silt, trace fine sand to no sand towards bottom, trace shells, slight sulfur odor. Moderate plasticity.		
			WR-WR-WR-WR	0	0.8		CL	Wet, soft, gray, CLAY, some silt, trace shells, slight sulfur odor, moderate plasticity.		
30			6-3-5-3	8	0		ML	Top 12 inches: Wet, soft, gray, CLAY, some silt, trace shells, slight sulfur odor, moderate plasticity. (MARL). Bottom 12 inches: wet soft, red-brown, SILT, some clay with higher percent silt lenses throughout, moderate plasticity black organics discoloration throughout.		
32										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-20067
Date: 05/16/2007 - 05/17/2007
Weather: Cloudy, Rain 60 deg F

Northing: 1118643.88
Easting: 922416.19
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Sara Chmura, Matt Vetter
Rig Type: Dierich D50

Total Depth: 48.0 Ft
Water Elev: NA
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
32			4-3-3-3	6	0		ML	Wet, soft, red-brown, SILT, some clay, silt lenses throughout, black organics discoloration throughout.		Silt
35			2-7-6-7	13	0		ML	Wet, medium stiff, red/brown SILT, some clay. Low plasticity.		
			5-4-3-3	7	0		ML	Wet, medium stiff, red/brown SILT, little clay, trace black organics Low plasticity.		
			WH-WH-WH-WH	0	0		ML	Wet, very soft, red/brown SILT, some clay, trace black organics. Low plasticity.		
40			WH-3-2-3	5	0		ML	Top 16 inches: wet, soft, red/brown SILT, some clay, trace black organics. Low plasticity. Bottom 4 inches: wet, soft, red/brown CLAY and SILT, low plasticity.		
			3-2-1-1	3	0		CL/ML	Wet, very soft, red/brown CLAY and Silt, trace black organics. Silt seam 3 to 5 inches from bottom. Low plasticity.		Clay
45			WH-WH-WH-WH	0	0		CL	Wet, very soft, red/brown CLAY, little silt, low to medium plasticity.		
48.0		OL-0317-06						GUS Sample. See geotechnical report for analysis.		

Null field readings indicate a reading was not taken.

BORING LOG	Page 1 of 3	Site: Onondaga Lake (Syracuse NY)
Honeywell		Boring No: OL-SB-20068 Date: 05/16/2007 Weather: Rain 60 deg F

Northing: 1118378.07 Easting: 922654.64 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 42.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			WR-WR-WR-WR	0			ML	Wet, very soft, black SILT, little gray silt-like grains. Low plasticity. Petroleum odor.		Silt
			WR-WR-WR-WR	0			ML	Wet, very soft, black SILT, little gray silt-like grains. Low plasticity. Petroleum odor.		
5			WR-WR-WR-WR	0			ML	Wet, very soft, black SILT, little gray silt-like grains. Low plasticity. Petroleum odor.		
			WR-WR-WR-WR	0			ML	Wet, very soft, black SILT, little gray silt-like grains. Low plasticity. Petroleum and sewage odor.		
			WR-WR-WR-WR	0			ML	Top 16 inches: Wet, very soft, black with little gray silt-like grains. Low plasticity. Petroleum and sewage odor. Bottom 8 inches: wet, very soft, gray SILT, some fine sand, trace shells. Low plasticity. Sulfur odor. (Marl)		Marl
10			WR-WR-WR-WR	0			ML	Wet, very soft black, SILT, some gray silt-like grains. Low plasticity. Petroleum odor.		Silt
			WR-WR-WR-WR	0			ML	Top 12 inches: Wet, very soft black, SILT, some gray silt-like grains. Low plasticity. Petroleum odor. Bottom 12 inches: Wet, very soft, gray, SILT, some fine sand, trace shells. Low plasticity. Sulfur odor. (Marl)		
			WR-WR-WR-WR	0			ML	Wet, very soft, gray SILT, little fine sand, trace shells. Finer grained toward bottom. Low plasticity. Sulfur odor		MARL
15										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-20068
Date: 05/16/2007
Weather: Rain 60 deg F

Northing: 1118378.07
Easting: 922654.64
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 42.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
15			WR-WR-WR-WR	0			ML	Wet, very soft, gray SILT, little fine sand, trace shells. Finer grained toward bottom. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0			ML	Wet, very soft, gray SILT, trace fine sand, trace shells. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0			ML	Wet, very soft, gray SILT, trace shells. Low plasticity. Sulfur odor.		
20			WR-WR-WR-WR	0			ML	Wet, very soft, gray SILT, trace shells. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0			ML/CL	Wet, very soft, gray SILT and Clay, trace shells. Low plasticity. Sulfur odor.		MARL
25			WR-WR-WR-WR	0			ML/CL	Wet, very soft, gray SILT and Clay, trace shells, clay content increasing with depth. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0			CL/ML	Wet, very soft, gray CLAY and Silt, trace shells. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0			CL/ML	Wet, very soft, gray CLAY and Silt, trace shells. Low plasticity. Sulfur odor.		
30										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-20068
Date: 05/16/2007
Weather: Rain 60 deg F

Northing: 1118378.07
Easting: 922654.64
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 42.0 FT
Water Elev: NA
Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
30			WR-WR-WR-WR	0			CL/ML	Top 12 inches: Wet, very soft, gray CLAY and Silt, trace shells. Low plasticity. Sulfur odor. Bottom 12 inches: Wet, very soft, red/brown CLAY, little silt, trace shells. Low to medium plasticity.		MARL
			WR-WR-WR-WR	0			CL	Wet, very soft, red/brown with little gray CLAY, some silt, trace shells. Low plasticity. Slight sulfur odor.		
35			WR-WR-WR-WR	0			CL/ML	Wet, very soft, red/brown CLAY and Silt, little fine sand, trace shells. Sand and shells in upper 5 inches. Slight sulfur odor in top 5 inches. Low plasticity.		
			WR-WR-WR-WR	0			CL	Wet, very soft, red/brown CLAY, little silt. Low to medium plasticity.		Clay
		OL-0317-07						GUS Sample. See geotechnical report for analysis.		
40		OL-0317-08						GUS Sample. See geotechnical report for analysis.		
42.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-20069
Date: 05/15/2007
Weather: Clear 75 deg F

Northing: 1118233.24 Easting: 922790.02 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 32.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			WR-WR-WR-WR	0	7.1		ML/SOLW	Wet, very soft black SILT and gray silt-like grains. Low plasticity. Petroleum like odor.		Solvay Waste
			WR-WR-WR-WR	0	9.2		ML/SOLW	Wet, very soft black SILT and gray silt-like grains. Low plasticity. Petroleum like odor.		
5			WR-WR-WR-WR	0	0.7		SOLW	Wet, very soft, light gray/white silt-like grains. Blue-green lens 17 inches from top. Low plasticity. Mothball and sewage odors.		
			WR-WR-WR-WR	0	0.4		SOLW	Wet, very soft, light gray, silt-like grains, blue-green lens 8 to 10 inches and alternating lenses from 10 to 24 inches from top. Alternating brown-stained grains and gray grains 16 to 18 inches and 22 to 23 inches from top. Low plasticity. Mothball and sewage odors.		
			5-4-2-2	6	0 0		ML	Top 10 inches: wet, very soft, light gray and blue-green silt-like grains. Darker gray with brown staining at Marl contact. Low plasticity. Mothball and sewage odor. (SOLW). Bottom 14 inches: moist, medium still, gray SILT, trace clay, trace shells. Low plasticity. Sulfur odor. (ML)		MARL
10			1-1-1-1	2	0.2		ML	Wet, very soft, gray SILT, little clay, trace shells. Low plasticity. Sulfur odor.		
			1-1-1-1	2	0.3		ML	Wet, very soft, gray/brown SILT, some clay, trace shells. Low plasticity. Sulfur odor.		
			WR-WR-WR-WR	0				No Recovery		
15										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-20069
Date: 05/15/2007
Weather: Clear 75 deg F

Northing: 1118233.24	Drilling Company: PARRATT WOLFF INC	Total Depth: 32.0 FT
Easting: 922790.02	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
15			WR-WR-WR-WR	0				No Recovery		MARL
			WR-WR-WR-WR	0	0		CL/ML	Wet, very soft, gray CLAY and SILT, trace shells. Low plasticity. Sulfur odor.		MARL
			WR-WR-WR-WR	0	0.3		CL/ML	Wet, very soft, gray CLAY and SILT, trace shells. Low plasticity. Sulfur odor.		MARL
20			WR-WR-WR-WR	0	0		CL/ML	Top 1.5 feet: Wet, very soft, gray CLAY and SILT, trace shells. Low plasticity. Sulfur odor. (CL/ML). Bottom 6 inches: wet, very soft. brown/gray CLAY, little silt, trace black friable organics. Low to medium plasticity. Sulfur odor. (CL)		MARL
			WR-WR-WR-WR	0	0		CL/ML	Top 20 inches: Wet, very soft, brown/gray, CLAY, little silt, trace black friable organics. Low to medium plasticity. Sulfur odor. (CL). Bottom 4 inches: Wet, very soft, red/brown, SILT, some clay. Low plasticity (ML).		Clay-Silt
25			WR-WR-WR-WR	0	0		CL/ML	Top 12 inches: wet, very soft, red/brown and gray CLAY, little silt, low plasticity, sulfur odor (CL). Bottom 12 inches: wet, very soft, red/brown SILT, some clay. Low plasticity. Sulfur odor (ML).		Clay-Silt
			WR-WR-WR-WR	0	0		CL/ML	Top 9 inches: wet, very soft, alternating gray and red/brown lenses of CLAY, little silt, trace black friable organics. Sulfur odor. (CL). Bottom 9 inches: wet, very soft, red/brown CLAY and Silt. trace black friable organics. Low to medium plasticity. Sulfur odor (CL/ML).		Clay-Silt
			WR-WR-WR-WR	0	0		CL	Top 9 inches: wet, very soft, red/brown-gray CLAY, some silt, trace black friable organics. Low to medium plasticity. Sulfur odor. Bottom 15 inches: wet, very soft, red/brown CLAY, little silt. Low to medium plasticity.		Clay-Silt / Clay
30										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-20069
Date: 05/15/2007
Weather: Clear 75 deg F

Northing: 1118233.24	Drilling Company: PARRATT WOLFF INC	Total Depth: 32.0 FT
Easting: 922790.02	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
30		OL-0317-09						GUS Sample. See geotechnical report for analysis.		
32.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-20070
Date: 05/14/2007 - 05/15/2007
Weather: Clear 70 deg F

Northing: 1118113.53	Drilling Company: PARRATT WOLFF INC	Total Depth: 32.0 FT
Easting: 922914.90	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0			WR-WR-WR-WR	0	0		ML	Top 20 inches: wet, very soft black, SILT. Low plasticity. Petroleum like odor. (ML). Bottom 4 inches: wet, very soft gray silt-like grains. Low plasticity. Mothball odor (SOLW)		Silt
			WR-WR-WR-WR	0	0		SOLW	Wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor.		
5			WR-WR-WR-WR	0	0		SOLW	Wet, very soft light gray/white, silt-like grains. Thin gray lens at 14 inches from top. Low plasticity. Mothball odor.		Solvay Waste
			4-2-1-1	3	0 0		SOLW	Top 15 inches: wet, very soft gray and light gray silt-like grains. Low plasticity. Mothball odor. (SOLW). Bottom: 9 inches: moist, stiff gray SILT and CLAY, trace shells. Low plasticity. Sulfur odor (ML/CL)		Marl
			WH-WH-1-1	1	0 0		SOLW	Top 15 inches: wet, very soft, light gray, silt-like grains. Low plasticity. Mothball odor (SOLW). Bottom 2 inches: moist, stiff gray SILT and CLAY, trace shells. Low plasticity (ML/CL).		Solvay Waste
10			WH-WH-WH-WH	0	0		ML/CL	Wet, soft, gray, SILT and CLAY, trace shells, low plasticity, sulfur odor.		
			WH-WH-WH-WH	0	0		ML/CL	Wet, soft, gray, SILT and CLAY, trace shells, low plasticity, sulfur odor.		Marl
15			WH-WH-WH-WH	0	0		ML/CL	Wet, soft, gray, SILT and CLAY, trace shells, low plasticity, sulfur odor.		
			WH-WH-WH-WH	0	0		ML/CL	Wet, soft, gray, SILT and CLAY, trace shells, low plasticity, sulfur odor.		
18										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-SB-20070
Date: 05/14/2007 - 05/15/2007
Weather: Clear 70 deg F

Northing: 1118113.53 Easting: 922914.90 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 32.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
18			WH-WH-WH-WH	0	0		CL/ML	Top 12 inches: wet, very soft, gray CLAY and Silt, trace shells. Low to medium plasticity. Sulfur odor. Bottom 12 inches: wet, very soft, red/brown with black organics, CLAY, some silt, trace shells. Low to medium plasticity.		Marl
20			WH-WH-WH-WH	0	0		CL/ML	Top 17 inches: wet, very soft, gray CLAY and Silt, trace shells, trace black friable organics. Sulfur odor. Bottom 7 inches: wet, very soft, red/brown and gray, CLAY and Silt, trace black friable organics. Low plasticity.		
			WH-WH-WH-WH	0	0		ML	Wet, very soft, red/brown SILT, some clay, trace black friable organics. Low plasticity.		Silt
25			WH-WH-WH-WH	0	0		ML	Wet, very soft, red/brown SILT, some clay, trace black friable organics. Low plasticity.		
			WH-WH-WH-WH	0	0		CL	Top 15 inches: wet, very soft, red/brown CLAY and Silt, trace black friable organics. Low plasticity. Bottom 9 inches: wet, very soft, red/brown CLAY, little silt. Low to medium plasticity.		Clay
		OL-0317-10						GUS Sample. See geotechnical report for analysis.		
30		OL-0317-11						GUS Sample. See geotechnical report for analysis.		
32.0										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20034
Date: 05/17/2007
Weather: Cloudy 55 deg F

Northing: 1118505.70 Easting: 922493.40 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 46.0 Water Elev: NA Depth Units: Ft

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0		OL-0317-12						GUS Sample. See geotechnical report for analysis.		
			WH-WH-WH-WH	0	1.5		ML	Wet, very soft, gray, SILT and fine Sand, trace shells. Low plasticity. Sulfur odor		
5		OL-0317-13						GUS Sample. See geotechnical report for analysis.		
		OL-0317-14						GUS Sample. See geotechnical report for analysis.		
10										
15										
19										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20034
Date: 05/17/2007
Weather: Cloudy 55 deg F

Northing: 1118505.70	Drilling Company: PARRATT WOLFF INC	Total Depth: 46.0
Easting: 922493.40	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
19										
20										
25										
30										
35			9-5-4-3	9	0		ML	Wet, medium stiff, red/brown, SILT, little black organics, trace clay. Low plasticity.		
38										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20034
Date: 05/17/2007
Weather: Cloudy 55 deg F

Northing: 1118505.70
Easting: 922493.40
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 46.0
Water Elev: NA
Depth Units: Ft

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
38										
40			4-3-1-1	4	0		CL/ML	Top 12 inches: Wet, soft, red/brown SILT and Clay, trace black organics. Low plasticity (ML/CL). Bottom 12 inches: Wet, very soft, red/bown CLAY, little silt, trace black organics. Low to medium plasticity (CL).		
		OL-0317-15						GUS Sample. See geotechnical report for analysis.		
45		OL-0317-16						GUS Sample. See geotechnical report for analysis.		
46.0										

See OL-VC-20034 log for lithology. Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20036
Date: 05/18/2007
Weather: Partly cloudy 52 deg F

Northing: 1118313.69
Easting: 922682.61
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 39.0
Water Elev: NA
Depth Units: Ft

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0										
5										
		OL-0317-19						GUS Sample. See geotechnical report for analysis.		
			WR-WR-WR-WR	0			ML	Wet, very soft, black, SILT. trace fine sand, trace organics. Low plasticity. Petroleum like odor.		
10			WR-WR-WR-WR	0			ML	Top 16 inches: Wet, very soft, black, SILT, trace fine sand, trace organics. Peat layer at 16 inches. Low plasticity. Petroluem like odor (ML). Bottom 8 inches: Wet, very soft, grayish-blue silt-like grains (SOLW). Sandy marl in shoe. Low plasticity. Mothball odor.		
15										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20036
Date: 05/18/2007
Weather: Partly cloudy 52 deg F

Northing: 1118313.69 Easting: 922682.61 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 39.0 Water Elev: NA Depth Units: Ft

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
15			WR-WR-WR-WR	0	3.4		ML/SOLW	Top 12 inches: Wet, very soft, black, SILT, trace organics. Low plasticity. Petroleum like odor (ML). Bottom 12 inches Wet, very soft, grayish-blue, silt-like grains. Low plasticity. Mothball and petroluem like odors (SOLW).		
								GUS Sample. Bottom of tube contained sandy marl. Discarded sample.		
20		OL-0317-17						GUS Sample. See geotechnical report for analysis.		
25										
30										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20036
Date: 05/18/2007
Weather: Partly cloudy 52 deg F

Northing: 1118313.69
Easting: 922682.61
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 39.0
Water Elev: NA
Depth Units: Ft

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
30										
35			WR-WR-WR-WR	0	0		CL	Top 18 inches: Wet, very soft, red/brown CLAY, little silt, trace shells. Low to medium plasticity. Bottom 6 inches: Wet, very soft, red/brown, CLAY, little silt. Low to medium plasticity		
		OL-0317-18						GUS Sample. See geotechnical report for analysis.		
39.0										

See OL-VC-20036 log for lithology. Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20038
Date: 05/18/2007
Weather: Partly cloudy 52 deg F

Northing: 1118126.09	Drilling Company: PARRATT WOLFF INC	Total Depth: 42.0
Easting: 922865.35	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0										
			WR-WR-WR-WR	0	2.4		SOLW	Wet, very soft, light gray/white, silt-like grains. Little cemented layers. Low plasticity. Mothball odor.		
5		OL-0317-20						GUS Sample. See geotechnical report for analysis.		
		OL-0318-01						GUS Sample. See geotechnical report for analysis.		
10										
15										
18										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20038
Date: 05/18/2007
Weather: Partly cloudy 52 deg F

Northing: 1118126.09	Drilling Company: PARRATT WOLFF INC	Total Depth: 42.0
Easting: 922865.35	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
18										
20										
25										
			WR-WR-WR-WR	0	2.4		CL	Wet, very soft, gray, CLAY, little silt, trace shells. Low to medium plasticity. Sulfur odor.		
		OL-0318-02						GUS Sample. See geotechnical report for analysis.		
30		OL-0318-03						GUS Sample. See geotechnical report for analysis.		
			WR-WR-WR-WR	0			CL	Wet, very soft, red/brown, CLAY, some silt, trace black organics, trace shells. Low plasticity.		
35			WR-WR-WR-WR	0	0		CL	Top 12 inches: Wet, very soft, red/brown, CLAY and Silt, trace shells. Low plasticity. Bottom 6 inches: Wet, very soft, red/brown, CLAY and Silt. Low plasticity.		
36										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20038
Date: 05/18/2007
Weather: Partly cloudy 52 deg F

Northing: 1118126.09	Drilling Company: PARRATT WOLFF INC	Total Depth: 42.0
Easting: 922865.35	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
36								GUS Sample: No recovery		
		OL-0318-04						GUS Sample. See geotechnical report for analysis.		
40		OL-0318-05						GUS Sample. See geotechnical report for analysis.		
42.0										

See OL-VC-20058 log for lithology. Null field readings indicate a reading was not taken.

BORING LOG		Site: Onondaga Lake (Syracuse NY) Boring No: OL-STA-20042 Date: 05/22/2007 Weather: Clear ~70 deg F
Honeywell		

Northing: 1118433.510 Easting: 922587.720 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 46.0 Ft Water Elev: NA Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0								Wash 4 inch casing to 38 ft.		
5										
10										
15										
18										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20042
Date: 05/22/2007
Weather: Clear ~70 deg F

Northing: 1118433.510
Easting: 922587.720
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 46.0 Ft
Water Elev: NA
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
18								Wash 4 inch casing to 38 ft.		
20										
25										
30										
35										
36										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20042
Date: 05/22/2007
Weather: Clear ~70 deg F

Northing: 1118433.510
Easting: 922587.720
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 46.0 Ft
Water Elev: NA
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
36								Wash 4 inch casing to 38 ft.		
		OL-0316-01			0		CL	Wet very soft, red/brown CLAY and Silt, low plasticity		
		OL-0316-02			0		CL	Wet very soft, red/brown CLAY and Silt, low plasticity		
40		OL-0316-03			0		CL	Wet very soft, red/brown CLAY and Silt, low plasticity		
		OL-0316-04			0		CL	Wet very soft, red/brown CLAY, some silt, low plasticity		
		OL-0316-05			0		CL	Wet. Very soft, red/brown CLAY, little silt, low to medium plasticity		
		OL-0316-06			0		CL	Wet. Very soft, red/brown CLAY, little silt, low to medium plasticity		
		OL-0316-07			0		CL	Wet. Very soft, red/brown CLAY, little silt, low to medium plasticity		
45		OL-0316-08			0		CL	Wet. Very soft, red/brown CLAY, little silt, low to medium plasticity		
46.0										

See OL-VC-20042 log for 0-38 ft lithology Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20052
Date: 05/21/2007
Weather: Clear 65 deg F

Northing: 1117989.90	Drilling Company: PARRATT WOLFF INC	Total Depth: 34.0
Easting: 923067.30	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0										
			WR-WR-WR-WR	0	0		SOLW	Wet, very soft, light gray/white, silt-like grains. Low plasticity. Mothball odor.		
5		OL-0318-06						GUS Sample. See geotechnical report for analysis.		
		OL-0318-07						GUS Sample. See geotechnical report for analysis.		
10										
15										
18										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20052
Date: 05/21/2007
Weather: Clear 65 deg F

Northing: 1117989.90
Easting: 923067.30
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 34.0
Water Elev: NA
Depth Units: Ft

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
18										
20			2-1-2-1	3	0		CL/ML	Wet, very soft, gray, CLAY and Silt, trace shells. Low plasticity. Sulfur odor.		
		OL-0318-08						GUS Sample. See geotechnical report for analysis.		
25		OL-0318-09						GUS Sample. See geotechnical report for analysis.		
			WR-WR-WR-WR	0	0		CL/ML	Top 12 inches: Wet, very soft, gray, CLAY and Silt, trace shells. Low plasticity. Sulfur odor (Marl). Bottom 12 inches: Wet, very soft, red/brown, CLAY and Silt. Low plasticity.		
30		OL-0318-10						GUS Sample. See geotechnical report for analysis.		
		OL-0318-11						GUS Sample. See geotechnical report for analysis.		
34.0										

See OL-VC-20052 log for lithology. Null field readings indicate a reading was not taken.

BORING LOG Honeywell	Page 1 of 3	Site: Onondaga Lake (Syracuse NY) Boring No: OL-STA-20053 Date: 05/23/2007 Weather: Clear, Sun, ~low 60's winds 5-10mph N-NW

Northing: 1118166.400 Easting: 922852.600 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 42.5 Ft Water Elev: NA Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0								Wash 4 inch casing to 34 ft.		
5										
10										
15										
18										

BORING LOG	Page 2 of 3
Honeywell	Site: Onondaga Lake (Syracuse NY) Boring No: OL-STA-20053 Date: 05/23/2007 Weather: Clear, Sun, ~low 60's winds 5-10mph N-NW

Northing: 1118166.400 Easting: 922852.600 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 42.5 Ft Water Elev: NA Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
18								Wash 4 inch casing to 34 ft.		
20										
25										
30										
35		OL-0314-01			0		CL	Top 12 inches: wet, very soft, red/brown CLAY, little silt, trace black organics. Low plasticity. Bottom 6 inches: wet, very soft, red/brown CLAY, some silt, trace black organics. Low plasticity		
36		OL-0314-02			0					

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20053
Date: 05/23/2007
Weather: Clear, Sun, ~low 60's winds 5-10mph N-NW

Northing: 1118166.400
Easting: 922852.600
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 42.5 Ft
Water Elev: NA
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
36		OL-0314-02			0		CL	Wet, very soft, red/brown clay, little silt, trace black organics. Low to medium plasticity		
		OL-0314-03			0					
		OL-0314-04			0		CL	Wet, very soft, red/brown clay, little silt, trace black organics. Low to medium plasticity		
		OL-0314-05			0		CL	Wet, very soft, red/brown clay, little silt, trace black organics. Low to medium plasticity		
40		OL-0314-06			0		CL	Wet, very soft, red/brown clay, little silt, trace black organics. Low to medium plasticity		
		OL-0314-07			0		CL	Wet, very soft, red/brown clay, little silt, trace black organics. Low to medium plasticity		
		OL-0314-08			0		CL	Wet, very soft, red/brown clay, little silt, trace black organics. Low to medium plasticity		
42.5										

See OL-VC-20053 log for 0-34 ft lithology. Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20054
Date: 05/21/2007
Weather: Clear 65 deg F

Northing: 1117943.40
Easting: 923227.40
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 28.0
Water Elev: NA
Depth Units: Ft

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0										
		OL-0318-12						GUS Sample. See geotechnical report for analysis.		
5		OL-0318-13						GUS Sample. See geotechnical report for analysis.		
10										
15										
18										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20054
Date: 05/21/2007
Weather: Clear 65 deg F

Northing: 1117943.40
Easting: 923227.40
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 28.0
Water Elev: NA
Depth Units: Ft

Depth	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
18			WR-WR-WR-WR	0	19.1		CL/ML	Wet, very soft, gray, CLAY and Silt, trace shells. Low plasticity. Sulfur and petroleum like odor.		
20		OL-0318-14						GUS Sample. See geotechnical report for analysis.		
25			WR-WR-WR-WR	0	0			Top 10 inches: Wet, very soft, gray, CLAY, some silt, trace shells. Low plasticity. Sulfur odor. Bottom 14 inches: Wet, very soft, red/brown CLAY, little silt. Low to medium plasticity.		
		OL-0318-15						GUS Sample. See geotechnical report for analysis.		
28.0										

See OL-VC-20054 log for lithology. Null field readings indicate a reading was not taken.

BORING LOG	Page 1 of 3	Site: Onondaga Lake (Syracuse NY)
Honeywell		Boring No: OL-STA-20056 Date: 05/01/2007 Weather: Clear 50 deg F

Northing: 1117902.85 Easting: 923425.95 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 45.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0								Wash casing to 35 feet.		
5										
10										
15										
18										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20056
Date: 05/01/2007
Weather: Clear 50 deg F

Northing: 1117902.85	Drilling Company: PARRATT WOLFF INC	Total Depth: 45.0 FT
Easting: 923425.95	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: FT
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
18								Wash casing to 35 feet.		
35–36			WH-WH-WH-WH	0	0		CL/ML	Wet, very soft, gray CLAY and SILT, trace shells. Low plasticity. Sulfur odor.		Marl

BORING LOG	Page 3 of 3
Honeywell	Site: Onondaga Lake (Syracuse NY) Boring No: OL-STA-20056 Date: 05/01/2007 Weather: Clear 50 deg F

Northing: 1117902.85 Easting: 923425.95 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 45.0 FT Water Elev: NA Depth Units: FT

Depth FT	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
36			WH-WH-WH-WH	0	0		CL/ML	Wet, very soft, gray CLAY and SILT, trace shells. Low plasticity. Sulfur odor.		Marl
			WH-WH-WH-WH	0	0		CL/ML	Wet, very soft, gray CLAY and SILT, trace shells. Low plasticity. Sulfur odor.		
40			WH-WH-WH-WH	0	0		CL	Wet, very soft, brown, CLAY, little silt. Medium plasticity.		Clay
		OL-0317-04						GUS Sample. See geotechnical report for analysis.		
45.0		OL-0317-05						GUS Sample. See geotechnical report for analysis.		

Null field readings indicate a reading was not taken.

BORING LOG	Site: Onondaga Lake (Syracuse NY)
	Boring No: OL-STA-20058
Honeywell	Date: 05/22/2007
	Weather: Partly Cloudy 55 deg F

Northing: 1118482.500	Drilling Company: PARRATT WOLFF INC	Total Depth: 45.0 Ft
Easting: 922559.830	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0								Wash 4 inch casing to 32 ft.		
5										
10										
15										
16										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20058
Date: 05/22/2007
Weather: Partly Cloudy 55 deg F

Northing: 1118482.500
Easting: 922559.830
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 45.0 Ft
Water Elev: NA
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
16								Wash 4 inch casing to 32 ft.		
20										
25										
30										
32										

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-STA-20058
Date: 05/22/2007
Weather: Partly Cloudy 55 deg F

Northing: 1118482.500
Easting: 922559.830
Mud Line: NA
Surface Water Depth: NA

Drilling Company: PARRATT WOLFF INC
Logging Company: Parsons
Geologist: Matt Vetter
Rig Type: Dierich D50

Total Depth: 45.0 Ft
Water Elev: NA
Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
32			WR-WR-WR-WR	0	0		CL/ML	Wet, very soft, gray CLAY and Silt, trace shells, low plasticity, sulfur odor.		
35			WR-WR-WR-WR	0	0		CL	Wet, very soft, red/brown CLAY, little silt, trace shells		
			WR-WR	0	0		CL/ML	Top 12 inches: wet, very soft, red/brown CLAY, little silt, trace shells. Low plasticity. Slight sulfur odor. Bottom 12 inches: wet, medium stiff, red/brown CLAY and Silt, trace black organics, silt content increase towards bottom. Low to medium plasticity		
		OL-0315-01	6-5							
		OL-0315-02			0		CL/ML	Wet, soft, red/brown CLAY and SILT, low to medium plasticity		
		OL-0315-03			0		CL/ML	Wet, soft, red/brown CLAY and SILT, low to medium plasticity		
40		OL-0315-04			0		CL/ML	Wet, soft, red/brown CLAY and SILT, low to medium plasticity		
		OL-0315-05			0		CL	Wet, soft, red/brown CLAY, some, low to medium plasticity		
		OL-0315-06			0		CL	Wet, soft, red/brown CLAY, some, low to medium plasticity		
		OL-0315-07			0		CL	Wet very soft, red/brown CLAY little silt, low to medium plasticity		
		OL-0315-08			0		CL	Wet very soft, red/brown CLAY little silt, low to medium plasticity		
45.0										

See OL-VC-20058 log for 0-32 ft lithology. Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: OL-VC-40020
Date: 09/30/2006
Weather:

Northing: 1126854.21	Drilling Company: Ocean Survey Inc	Total Depth: 19.5 Ft
Easting: 915622.11	Logging Company: Parsons	Water Elev: 363.2 Ft
Mud Line: 339.6 Ft	Geologist: SARA CHMURA	Depth Units: Ft
Surface Water Depth: 23.6 Ft	Rig Type:	

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0									Vibracore	
									Vibracore	
5										
10										
15										
19.5										

Null field readings indicate a reading was not taken.

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: WA-SB-29
Date: 04/19/2007
Weather: Clear 60 deg F

Northing: 1117727.41	Drilling Company: PARRATT WOLFF INC	Total Depth: 37.0 Ft
Easting: 923377.10	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
0								Hand clear to 5 ft.		Fill
5			10-7-3-3	10	0			Bottom 3 inches: Wet, loose, red and gray coarse-medium-fine SAND, trace silt. Poorly sorted. Bottom 4inches: Wet, loose, gray, medium-fine SAND, trace silt, trace fine gravel. Poorly sorted		Fill
			4-3-3-2	6				No recovery		
10			3-2-2-2	4	7.2		SOLW	Wet, very soft, white and light gray silt-like grains. Low plasticity. Mothball like odor.		Solvay Waste
			2-2-1-1	3	1.5		SOLW	Wet, very soft, white and light gray silt-like grains. Several harder layers in bottom 4 inches. Low plasticity. Mothball like odor.		Solvay Waste
15			1-1-1-1	2	0.7		SOLW	Wet, very soft, white, silt-like grains. Several harder layers in the top 5 inches. Low plasticity. Mothball like odor.		Solvay Waste

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: WA-SB-29
Date: 04/19/2007
Weather: Clear 60 deg F

Northing: 1117727.41	Drilling Company: PARRATT WOLFF INC	Total Depth: 37.0 Ft
Easting: 923377.10	Logging Company: Parsons	Water Elev: NA
Mud Line: NA	Geologist: Matt Vetter	Depth Units: Ft
Surface Water Depth: NA	Rig Type: Dierich D50	

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
15			1-1-1-1	2	4.1 0		ML/SM	Top 12 inches: Wet, very soft, white and gray, silt-like grains, some harder coarse sand size particles. Low plasticity. Mothball like odor (SOLW). Bottom 12 inches: Wet, very soft light gray SILT and coarse-medium Sand, little shells. Fine sand lens at contact with the SOLW. low plasticity (ML/SM)		Solvay Waste
			1-2-1-1	3	0		ML/SM	Wet, very soft, light gray, SILT and coarse-medium SAND, little shells. Low plasticity		Marl
20			2-1-1-2	2	0		ML	Wet, very soft, gray, SILT, some fine sand, little shells. Low plasticity. Slight sulfur odor.		
			3-4-4-5	8	0		ML	Wet, very soft, gray SILT, some fine sand, little shells. Pin-size NAPL 11 inches from the bottom. Low plasticity. Slight sulfur odor.		
			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray, SILT, little fine sand, little shells. Low plasticity. Slight sulfur odor.		
25			WH-WH-1-1	1	0		ML	Wet, very soft, gray, SILT, trace fine sand, trace shells. Low plasticity. Slight sulfur odor.		
			WH-WH-WH-WH	0	0		ML	Wet, very soft, gray, SILT, trace fine sand, trace shells. Low plasticity. Slight sulfur odor.		
30			WH-WH-WH-WH	0	0		SM/ML	Top 9 inches: Wet, very soft, gray, SILT, trace fine sand, trace shells. Low plasticity. Slight sulfur odor. Bottom 8 inches: Wet, very soft, gray, medium-fine		

BORING LOG

Honeywell

Site: Onondaga Lake (Syracuse NY)
Boring No: WA-SB-29
Date: 04/19/2007
Weather: Clear 60 deg F

Northing: 1117727.41 Easting: 923377.10 Mud Line: NA Surface Water Depth: NA	Drilling Company: PARRATT WOLFF INC Logging Company: Parsons Geologist: Matt Vetter Rig Type: Dierich D50	Total Depth: 37.0 Ft Water Elev: NA Depth Units: Ft

Depth Ft	Recov	Sample ID	Blow Count	N Value	PID (ppm)	Mercury (mg/m3)	USCS Code	Soil Description	Sample Method	Stratum
30			WH-WH-WH-WH	0	0		SM/ML	SAND and SILT, trace shells. Low plasticity. Slight sulfur odor.		Marl
			WH-1-1-1	2	0		CL	Wet, very soft, red/brown CLAY, some silt. Low plasticity.		Clay
								GUS Sample		
35								GUS Sample		
37.0										

Null field readings indicate a reading was not taken.

Section O

Compatibility Study

Mueser Rutledge
Consulting Engineers

14 Penn Plaza • 225 W. 34th Street • New York, NY 10122
Tel: (917) 339-9300 • Fax: (917) 339-9400
www.mrce.com

January 19, 2005

Parsons
290 Elwood Davis Road, Suite 312
Liverpool, New York 13088

Attention: Mr. Greg Gibbons

Re: Proposed Compatibility Testing
of Hydraulic Barrier Materials
Semet/Willis Site
Geddes, New York
MRCE File 9801

Gentlemen:

This memorandum transmits our intended scope and methodology for performing compatibility testing on materials potentially to be installed below ground as part of the shoreline hydraulic barrier. These materials will be tested for compatibility against pure site DNAPL, the main contaminant in the shallow site groundwater. Compounds in the site DNAPL obtained from extraction wells on the site include: acetone, benzene, chlorobenzene, dichlorobenzene, and others. Testing of barrier components before they are used on site is intended to lead to selection of materials that will not significantly degrade over time when exposed long term to site groundwater. It is intended to perform long-term immersion testing on the order of six months in order to evaluate that compatibility.

These tests supplement the compatibility testing program previously transmitted to regarding the wick drain materials proposed for the shallow trench head equalization system.

Materials Selected for Barrier Compatibility Testing

The following materials that are being considered for use in the proposed hydraulic barrier will be tested against site DNAPL include:

- A36 "conventional" Steel (steel sheetpile)
- Marine Grade Steel (steel sheetpile)
- Interlock Sealant materials:
  - Adeka Ultra Seal A-30
  - Adeka Ultra Seal P-201
  - De Neef Swellseal Sealant WA
  - Waterloo Barrier Sealant Grout

Test Equipment

- Epoxy lined steel containers to hold DNAPL
- Glass beaker or other apparatus to support test samples
- Scale / measurement calipers

TEST SETUP PROCEDURE

The following procedure will be applied to the proposed barrier materials:

- Before testing, the steel coupons will be thoroughly cleaned with an abrasive. After all visible surface corrosion has been removed, the coupon surfaces will be finished with #120 sandpaper. The specimens will be cleaned with scouring powder and rinse in distilled water. Final cleaning shall be performed with acetone or alcohol, followed by air drying. Steel coupons will be on the order of 2 inches square by 1/4" thick in size.
- Elastomeric seal and grout specimens shall be made in a mold. The elastomeric specimens will be made approximately ¼ inch thick by 2 inches square. diameter discs before testing. Grout specimens will be on the order of two inches tall by one inch in diameter (small cylinders).
- The specimens will be weighed and dimensions accurately by electronic caliper recorded to the nearest 0.001 inches.
- The total surface area of the specimens will be calculated (exposure area).
- DNAPL will be placed into each lined steel test container to sufficient depth to submerge the specimens.
- The test specimens will be submerged in the DNAPL, but elevated above the bottom on a non reactive stand (glass beaker or equivalent). Specimens will be placed so as not to be in contact.

CONTROL TESTING

Specimens of each material will also be immersed in tap water and measured at the same time as the DNAPL immersion specimens, as a control.

TEST MEASUREMENT PROCEDURE

Although EPA Method 1110 specifies a test temperature of 55°C, all tests shall be performed at room temperature for safety because DNAPL contains several flammable components with low vapor pressures and flash points. Extinguish any open nearby flames. Open each container of DNAPL immersed samples in a hooded area.

Steel Coupons

- At the designated reading intervals, remove each sample from the DNAPL container.
- Clean the specimens with a mild abrasive and brush to remove traces of corrosion.
- The same cleaning procedure should be performed on an unexposed sample to ensure that uncorroded steel is not being removed from the samples during cleaning. Weigh the sample before and after cleaning to verify no steel is removed.
- After the samples have been dried, weigh them. The rate of corrosion is calculated as:

$$CorrosionRate(^{mm}/_{yr}) = \frac{W_{loss} \cdot 87600}{A \cdot t \cdot \rho_{sample}}$$

where:

- W_{loss} = sample weight loss in milligrams
- A = Exposed area in square centimeters
- t = time of exposure in hours
- ρ_{sample} = density of sample material. Unless otherwise specified, a density of 7.86 g/cm^3 shall be used for steel samples.

Elastomeric and Grout Specimens

Elastomeric and grout densities will be calculated based on clean sample dimensions recorded at the start of the test. Also recorded will be any obvious physical changes to the specimens, such as in elasticity, color, cracking, flaking or surface texture. These can be compared to the water immersion control specimens.

Specimens with a corrosion rate of less than 6.35 mm/yr are considered compatible with the DNAPL waste.

MEASUREMENT INTERVALS

Typically, measurements will be taken every two weeks, or approximately twice per month. At the end of the testing, a sample of DNAPL will be sent out for chemical testing to compare with the initial values.

DATA REPORTING

The following data will be included in our data report, to be issued approximately once per two months:

- Chemical composition of DNAPL waste
- Materials tested
- Length of exposure
- Corrosion rate
- Qualitative compatibility

If you have any questions, please contact us.

Very truly yours,

MUESER RUTLEDGE CONSULTING ENGINEERS

By: Jim M. Tantalla
James Tantalla

JT:chs:cmptbiltyltr

APPENDIX B

MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: SEMET IRM

File # 9801
Subcode ______

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: SDH7
Ch'k'd By: ______
Sheet 1 **of** ___

Material Sample # POSITION 1 (1 HOLE)
Material Sample Type AMERIDRAIN 407
Submersion Liquid DNAPL

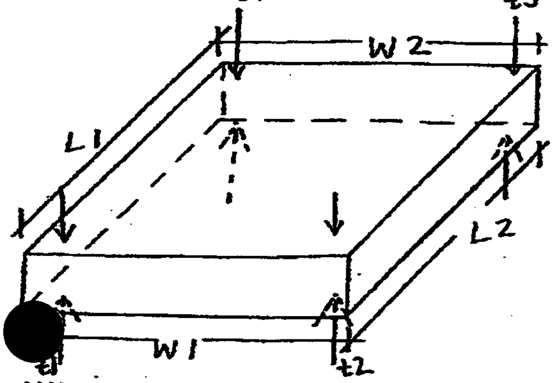
CLAMP: FLUSH, THEN 5 FULL TURNS

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial					Initial				
Date:	3/4	4/8	8/25							
W/ HOOK & CLAMP Weight (g):	207.8	226.9	215.0							
Dimensions (in):										
1/3 —thickness 1	0.12	0.113	0.113							
2/3 —thickness 2	0.12	0.107	0.119							
3/3 —thickness 3	0.11	0.107	0.106							
~~—thickness 4~~										
—width 1	4.07	4.163	4.19							
—width 2	4.07	4.222	4.253							
— width 3	4.101	4.242	4.267							
(L) —length 1	1.22'	1.29	1.27							
(L) —length 2	1.22'	1.29	1.28							
Photograph:	✓	✓	✓							

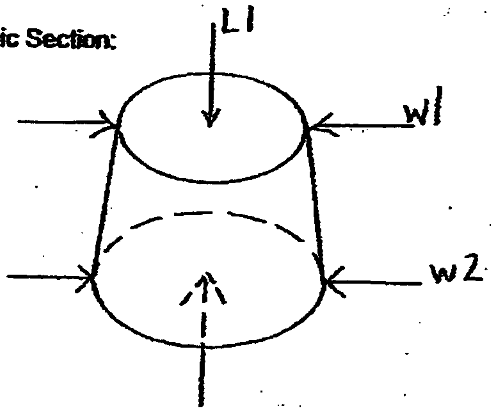
no weakness felt by twisting

DIMENSIONS:

Prism:



Cylinder/Conic Section:



MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: SEMES IRM

File # 9801

Subcode

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: SOH?

Ch'k'd By:

Sheet 1 of

Material Sample # [illegible] 2 (2 HOURS)

Material Sample Type AMERIURATED 607

Submersion Liquid DNAPL

CLAMP: FLUSH, THEN [illegible] FULL TURNS

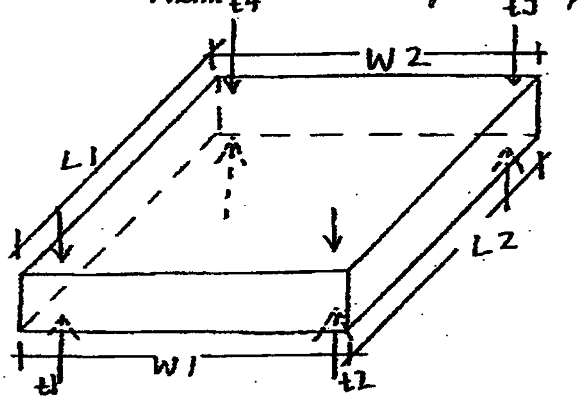
	Prismatic Sample					Cylindrical or Conic Sample				
	Initial					Initial				
Date:	3/4	4/8	8/25							
w/ HOOK & [illegible] Weight (g):	217.7	238.3	229.7							
Dimensions (in):										
–thickness 1 (1/3)	0.14	0.140	0.197							
–thickness 2 (2/3)	0.14	0.140	0.159							
–thickness 3 (3/3)	0.124	0.129	0.138							
~~–thickness 4~~										
–width 1	3.908	3.975	3.997							
–width 2	3.908	3.966	4.012							
width 3	3.951	4.030	4.067							
–length 1	1.22	1.26	1.26							
–length 2	1.21	1.27	1.25							
Photograph:	✓	✓	✓							

no weathering [illegible]

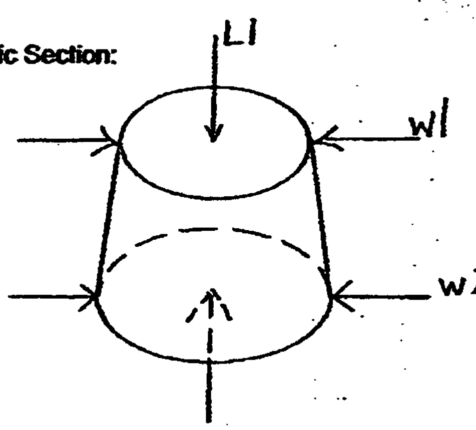
by [illegible]

DIMENSIONS:

Prism:



Cylinder/Conic Section:



M:\LABORATORY\CompatibilityDataSheet.xls

2/25/2005

MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: SEMET IKM

File # 9801

Subcode

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: SC#3

Ch'k'd By:

Sheet 1 of

Material Sample # POSITION 3 (SIDES)

Material Sample Type VILEX HD7407 -TYPAR 3351-M

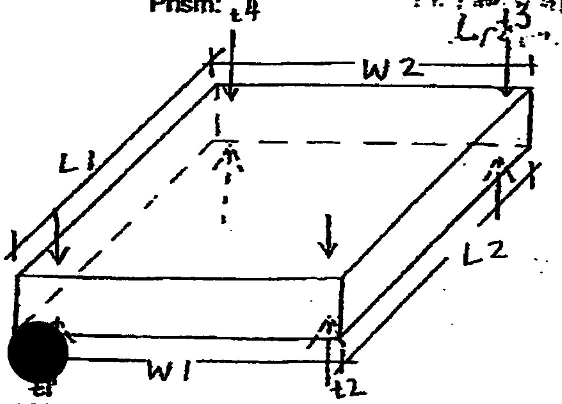
Submersion Liquid DNAPL

CLIMAX FLUSH, THEN [illegible]

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial					Initial				
Date:	3/4	4/18	8/25							
w/ HOOK [illegible] Weight (g):	2033	221.2	219.4							
Dimensions (in):										
–thickness 1	0.12	0.120	0.[illegible]1							
–thickness 2	0.123	0.139	0.119							
–thickness 3	0.120	0.117	0.116							
~~–thickness 4~~										
–width 1	3.978	4.040	4.026							
–width 2	3.978	4.048	4.116							
width 3	4.013	4.083	4.135							
(y₁) –length 1	1.2	1.27	[illegible]							
(y₂) –length 2	1.22	1.27	1.26							
Photograph:	✓	✓	✓							

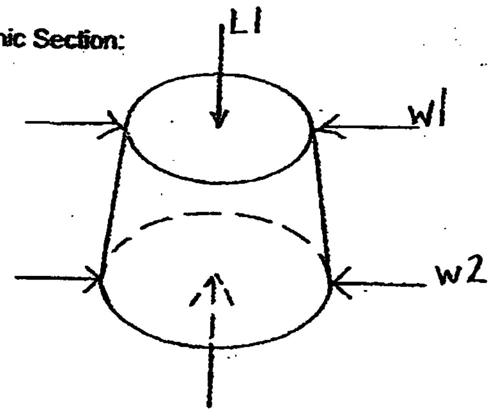
DIMENSIONS:

Prism:



b-flexible core in [illegible]

Cylinder/Conic Section:



M:\LABORATORY\CompatibilityDataSheet.xls

2/25/2005

MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: SEMET IRM

File # 9801

Subcode:

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Material Sample # (WICKDRAIN) POSITION 4 (4 HOLES)

Material Sample Type NILEX MD 7407-TYPAR 3401-M

Submersion Liquid DNAPL

Perf. By: SOHJ

Ch'k'd By: ---

Sheet 1 of ___

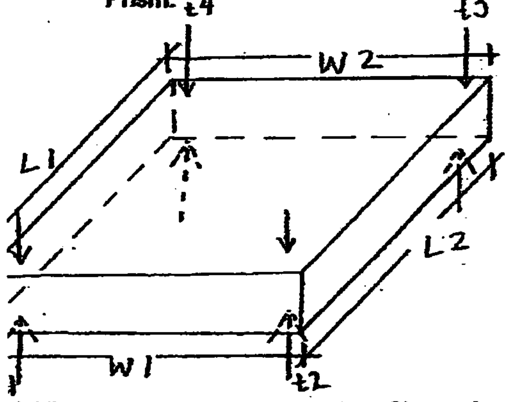
CLEAR FLUID, TIMES [illegible]

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial					Initial				
Date:	3/4	4/1	3/25							
W/ HOOK (clean) Weight (g):	205.0	210.4	215.5							
Dimensions (in):										
—thickness 1	0.123	0.120	[illegible]							
—thickness 2	0.128	0.127	[illegible]							
—thickness 3	0.118	0.115	0.111							
~~—thickness 4~~										
—width 1	3.972	4.107	4.068							
—width 2	3.972	4.058	4.034							
—width 3	4.015	4.131	4.145							
(4s) —length 1	1.21	1.25	1.25							
(4s) —length 2	1.21	1.27	1.26							
Photograph:	✓	✓	✓							

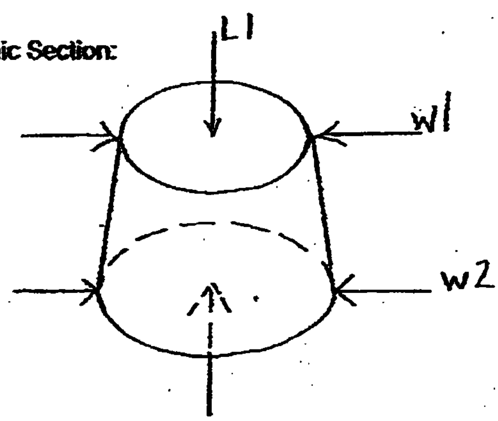
[illegible] Direction

DIMENSIONS:

Prism:



Cylinder/Conic Section:



\LABORATORY\CompatibilityDataSheet.xls

2/25/2005

MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: SEMET IKM

File # 9801
Subcode —

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: R
Ch'k'd By:
Sheet 7 of

Material Sample # I
Material Sample Type DENIEF SWELLSEAL WA
Submersion Liquid DNAPL

Cures in DNAPL

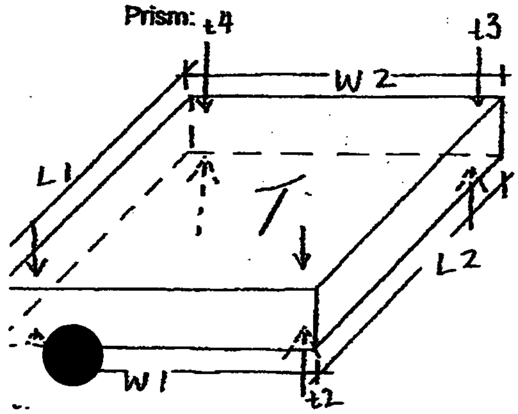
NOT AS STICKY AS TAPWATER - IMMERSED SAMPLE (IF COMPRESSED, CAN STICK A LITTLE TO NITRILE GLOVES)

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial				CHANGE	Initial				
Date:	1/4.05	4/8	9/9		Δ					
Weight (g):	18.9	37.4	53.7		+34.8					
Dimensions (in):										
—thickness 1	0.195	0.198	0.306		+0.111					
—thickness 2	0.080	0.380	0.363		+0.273					
—thickness 3	0.106	0.231	0.254		+0.148					
—thickness 4	0.208	0.304	0.225		+0.017					
—width 1	1.461	2.126	1.385		+0.924					
—width 2	1.801	2.125	1.393		+0.592					
—length 1	2.666	3.102	3.924		+1.258					
—length 2	2.445	3.405	3.790		+1.345					
Photograph:	✓	✓	✓							

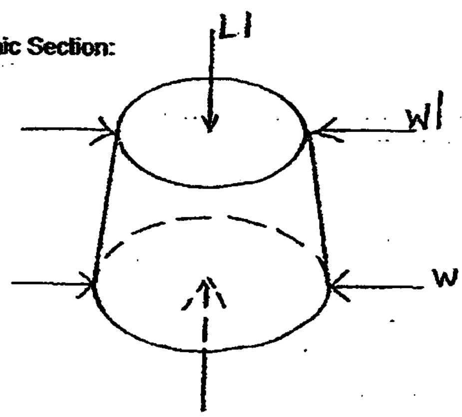
184% change

DIMENSIONS:

Prism:



Cylinder/Conic Section:



MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: Semet File #: 9801

Subcode: –

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: RC

Chk'd By:

Sheet 1 of

Material Sample #: M

Material Sample Type: Waterloo Barrier Sealant Grout

Submersion Liquid: DNAPL

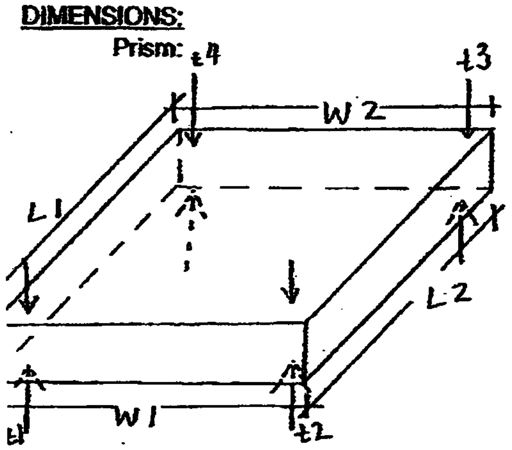
HARD, CONDITION UNCHANGED

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial					Initial				CHANGE
Date:	[illegible]						4/8	9/7		Δ
Weight (g):	244.52						255.3	256.4		+11.88
Dimensions (in):										
--thickness 1										
--thickness 2										
--thickness 3										
--thickness 4										
--width 1	1.889						1.877	1.888		–
--width 2	2.193						2.191	2.202		↑ 0.009
--length 1	2.316						2.330	2.342		↑ 0.026
--length 2										
Photograph:	✓						✓	✓		

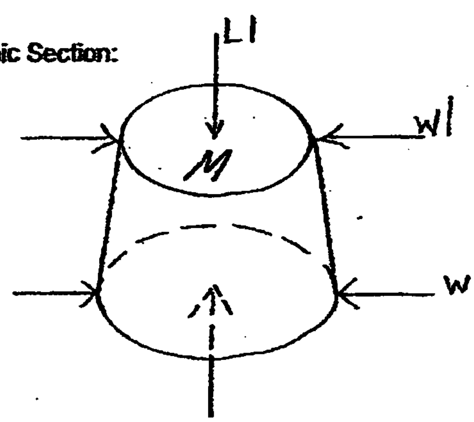
5% change

DIMENSIONS:

Prism:



Cylinder/Conic Section:



I:\LABORATORY\CompatibilityDataSheet.xls

2/25/2005

MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: SEMET IRM

File # 9801
Subcode —

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Material Sample # XYZ
Material Sample Type ADEKA P-201
Submersion Liquid DNAPL

Perf. By: R
Ch'k'd By: --
Sheet 1 of —

1: Tore easily; no stretch

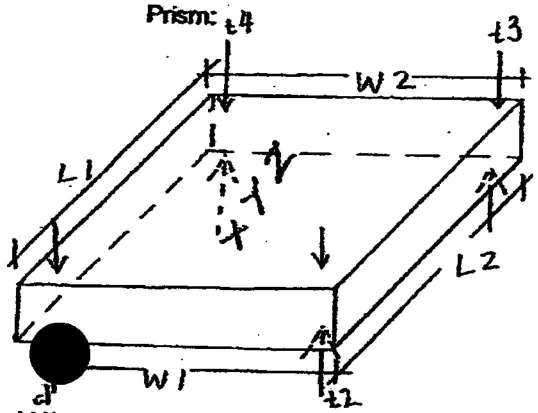
2: V. brittle, [illegible] [illegible] [illegible] from DNAPL [illegible]

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial				CHANGE	Initial				
Date:	29 Feb	4/11		9/7	Δ					
Weight (g):	4.769	25.0		26.1	+21.3					
Dimensions (in):										
--thickness 1	0.102	0.160	0.104	0.205	+0.103					
--thickness 2	0.098	0.109	0.160	0.196	+0.098					
--thickness 3	0.106	[illegible]		0.175	+0.069					
--thickness 4	0.105	0.187		0.192	+0.087					
--width 1	0.726	1.309		1.400	+0.674					
--width 2	0.722	1.329		1.330	+0.608					
--length 1	2.79	4.919		4.94	+2.15					
--length 2	2.792	4.922		4.935	+2.143					
Photograph:	✓	✓		✓						

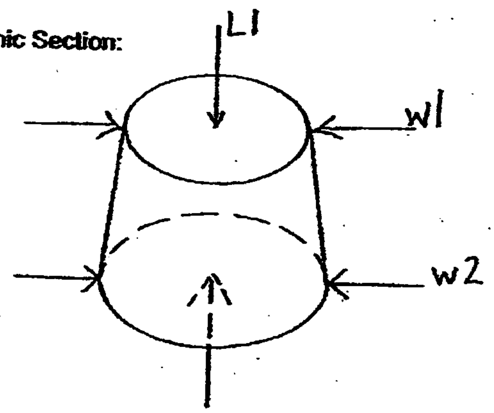
447% CHANGE BY WT.

DIMENSIONS:

Prism:



Cylinder/Conic Section:



M:\LABORATORY\CompatibilityDataSheet.xls

2/25/2005

MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: Semet IRM — File # 9801

Subcode: ____

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: R

Ch'k'd By: ____

Sheet 1 of ____

Material Sample # A

Material Sample Type ADEKA A-30

Submersion Liquid DNAPL

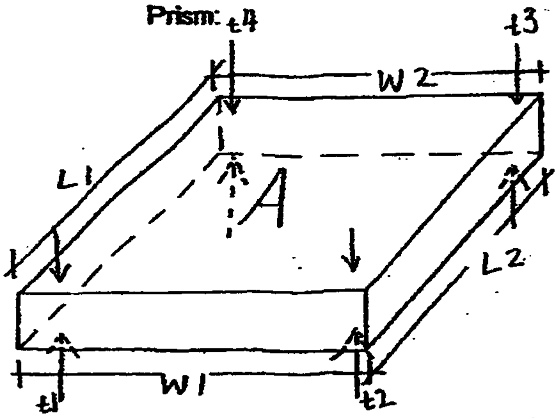
4/11 TORE WHEN STRETCHED

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial				CHANGE	Initial				
Date:	25F-2005	~~4/11~~	4/11	9/7	Δ					
Weight (g):	6.318	~~43.7~~	43.7	48.1	+41.78					
Dimensions (in):										
—thickness 1	0.147	~~[illegible]~~	0.209	0.420	+0.273					
—thickness 2	0.209	~~[illegible]~~	0.400	0.192	−0.017					
—thickness 3	0.217	~~0.209~~	0.428	0.418	+0.201					
—thickness 4	0.107	~~[illegible]~~	0.167	0.184	+0.077					
—width 1	1.087	~~[illegible]~~	1.949	1.899	+0.812					
—width 2	1.042	~~[illegible]~~	1.865	1.822	+0.780					
—length 1	1.909	~~[illegible]~~	[illegible]	3.426	+1.517					
—length 2	1.849	~~[illegible]~~	3.247	3.527	+1.678					
Photograph:	✓		✓	✓						

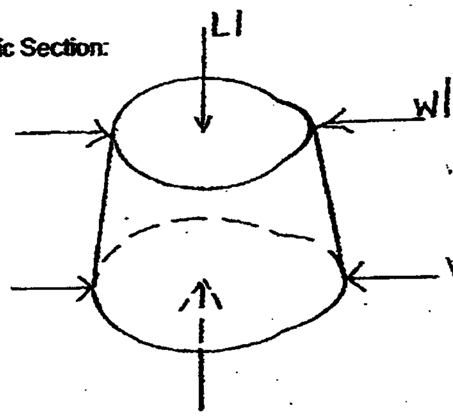
661% CHANGE BY WEIGHT

DIMENSIONS:

Prism:



Cylinder/Conic Section:



M:\LABORATORY\CompatibilityDataSheet.xls

2/25/2005

MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: Semet - IRM   File # 9501
Subcode —

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: R
Ch'k'd By: —
Sheet 1 of ___

Material Sample # KM 4MM
Material Sample Type ADEKA KM 4mm
Submersion Liquid DNAPL

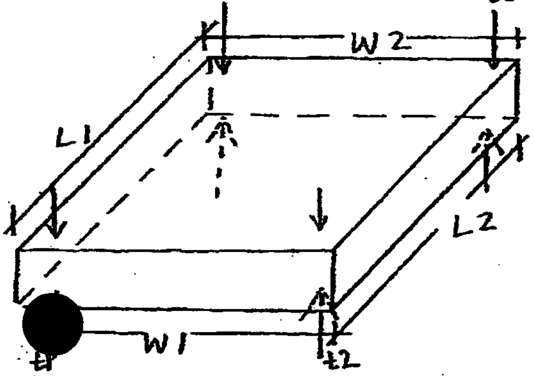
9/7 10% WHEN STRETCHED MORE THAN 10%

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial					Initial				CHANGE
Date:						28 Feb 05	4/11	9/7		Δ
Weight (g):						3.915	19.7	21.8		18.385
Dimensions (in):										
--thickness 1										
--thickness 2										
--thickness 3										
--thickness 4										
--width 1						0.187		0.342		+ 0.155
--width 2						0.187		0.342		+ 0.155
--length 1					0.505'=	6.099''	0.91' (ft)	0.93' (ft)		+ 0.422
--length 2										
Photograph:						✓	✓	✓		

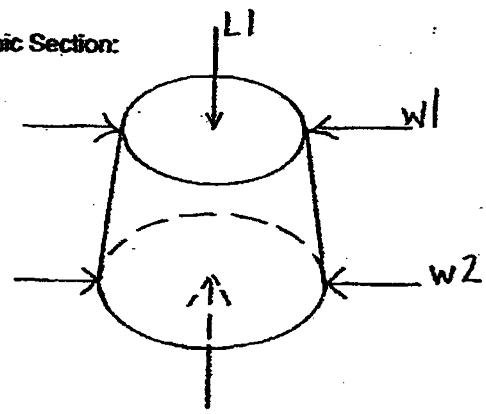
538 % CHANGE BY WEIGHT

DIMENSIONS:

Prism:



Cylinder/Conic Section:



M:\LABORATORY\CompatibilityDataSheet.xls

2/25/2005

MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: SEMET TRM

File # 9801

Subcode ____

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: R

Ch'k'd By: ____

Sheet 1 of ____

Material Sample # CONTAINER 1

Material Sample Type MARINE GRADE STEEL

Submersion Liquid DNAPL

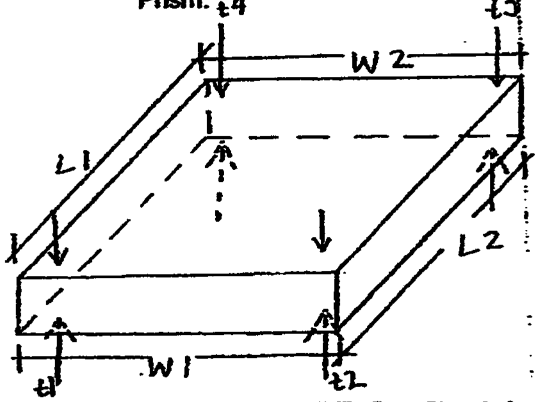
(2 PHASES: DARK, HEAVY PHASE - MAJORITY
SMALL AMT. - PALE, LIGHT PHASE (MORE CHLORO- BENZENE ?))

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial				CHANGE	Initial				
Date:	25 Feb	4/11	9/7/05		Δ					
Weight (g):	481.5	481.1	480.8		-0.7					
Dimensions (in):										
--thickness 1	0.465	0.458	0.466							
--thickness 2	0.467	0.455	0.462							
--thickness 3	0.467	0.462	0.462							
--thickness 4	0.461	0.460	0.463							
--width 1	2.304	2.302	2.304							
--width 2	2.265	2.253	2.253							
--length 1	3.518	3.509	3.496							
--length 2	3.672	3.665	3.658							
Photograph:	✓	✓	✓							

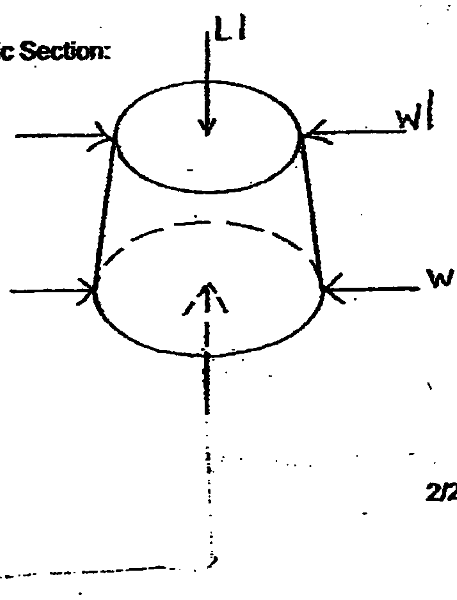
-0.1% CHANGE BY WEIGHT

DIMENSIONS:

Prism:



Cylinder/Conic Section:



MUESER RUTLEDGE CONSULTING ENGINEERS

JOB: SEMET IRM　　File # 9801

Subcode –

CHEMICAL COMPATIBILITY TESTING DATA SHEET

Perf. By: R

Ch'k'd By:

Sheet 1 of __

Material Sample # 2H ((OUTALLK 1))

Material Sample Type A36 STEEL

Submersion Liquid DNAPL

2 PHASES: DARK, HEAVY PHASE - MOST

PALE, LIGHT " - SMALL AMT

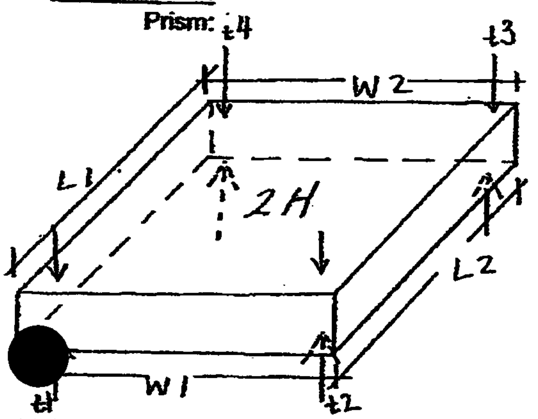
(MONO CHLOROBENZENE ?)

	Prismatic Sample					Cylindrical or Conic Sample				
	Initial				CHANGE	Initial				
Date:	25 FEB	4/11	9/7/05		Δ					
Weight (g):	783.6	783.3	782.3		1.3					
Dimensions (in):										
--thickness 1	0.371	0.368	0.370							
--thickness 2	0.370	0.369	0.369							
--thickness 3	0.368	0.367	0.366							
--thickness 4	0.370	0.369	0.370							
--width 1	4.071	4.068	4.069							
--width 2	4.054	4.055	4.051							
--length 1	4.075	4.072	4.079							
--length 2	4.098	4.093	4.087							
Photograph:	✓	✓	✓							

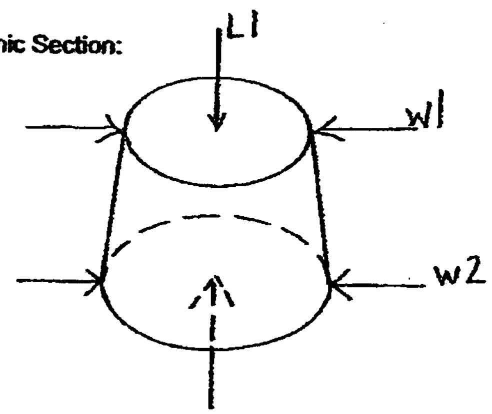
–0.20% CHANGE BY WEIGHT

DIMENSIONS:

Prism:



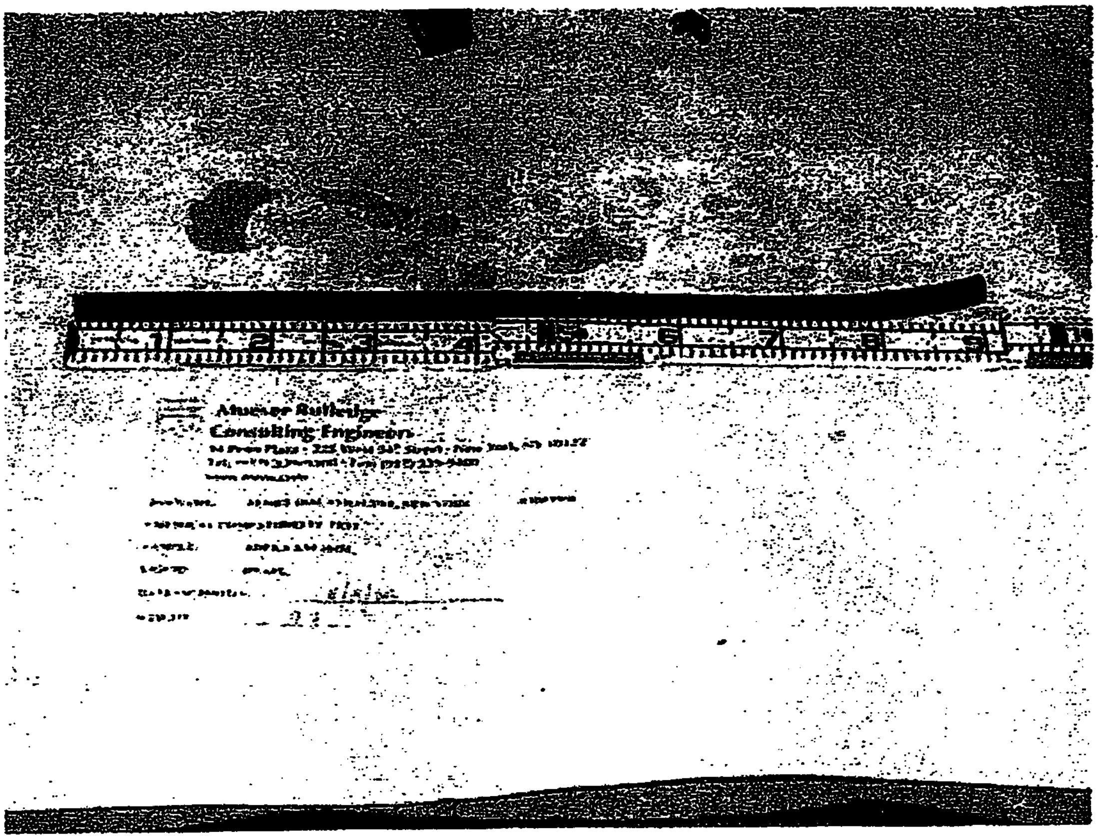
Cylinder/Conic Section:



M:\LABORATORY\CompatibilityDataSheet.xls

2/25/2005

APPENDIX C



Willis/Semet

Syracuse New York

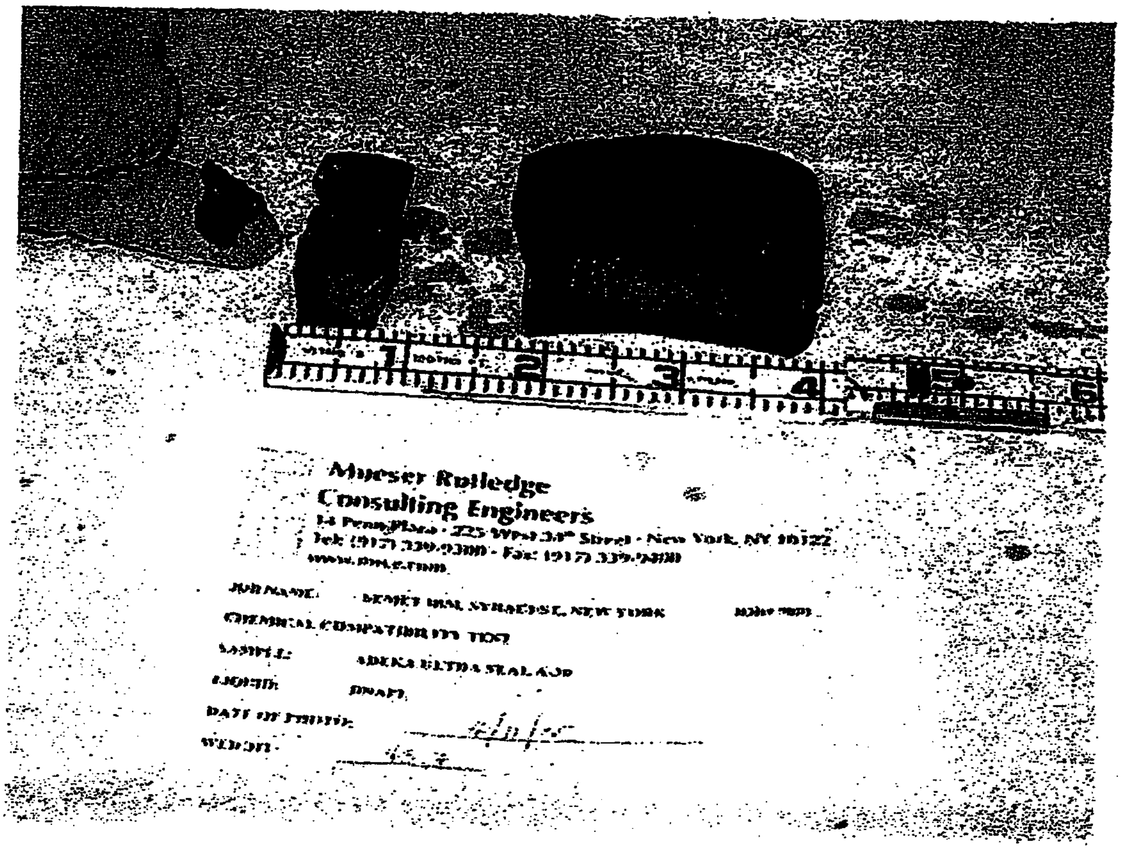
Parsons

Liverpool New York

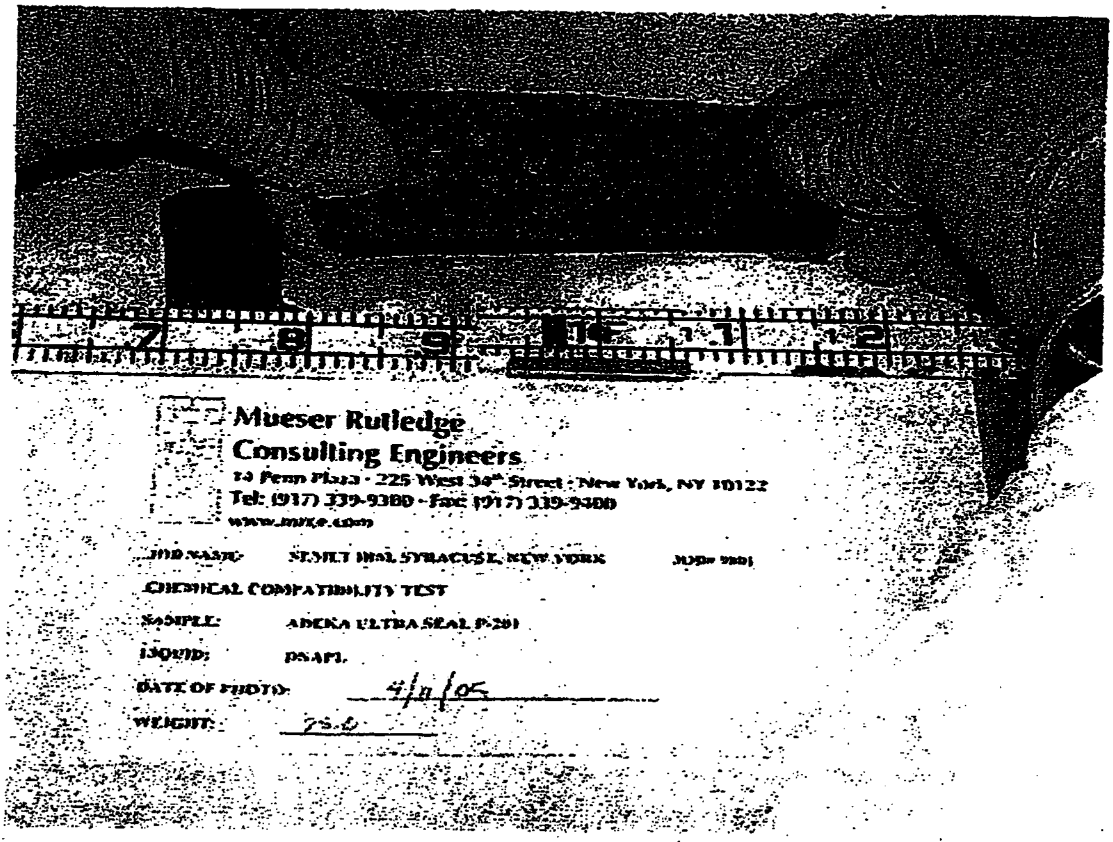
MUESER RUTLEDGE CONSULTING ENGINEERS

14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122

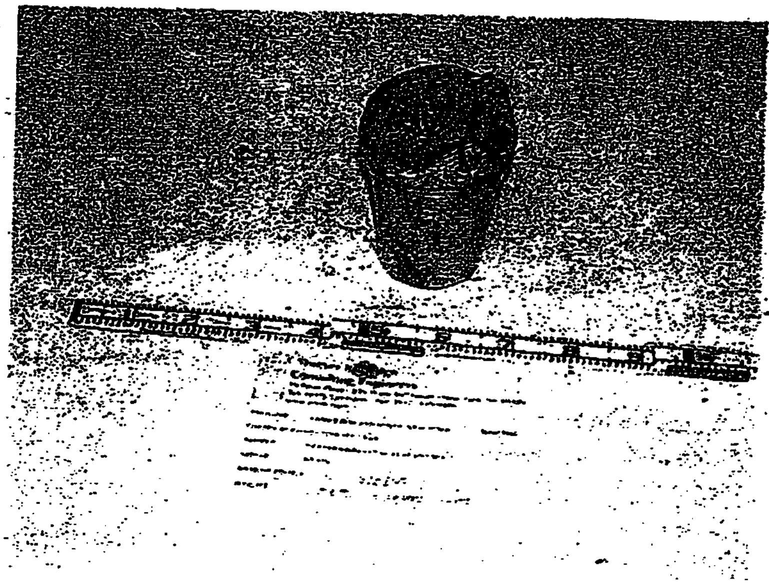
SCALE	MADE BY: SOHJ	DATE: 11/16/2005	FILE NO.
–	CHKD BY: DRG	DATE: 11/16/2005	9801
Adeka KM 4mm			PHOTO NO. 1

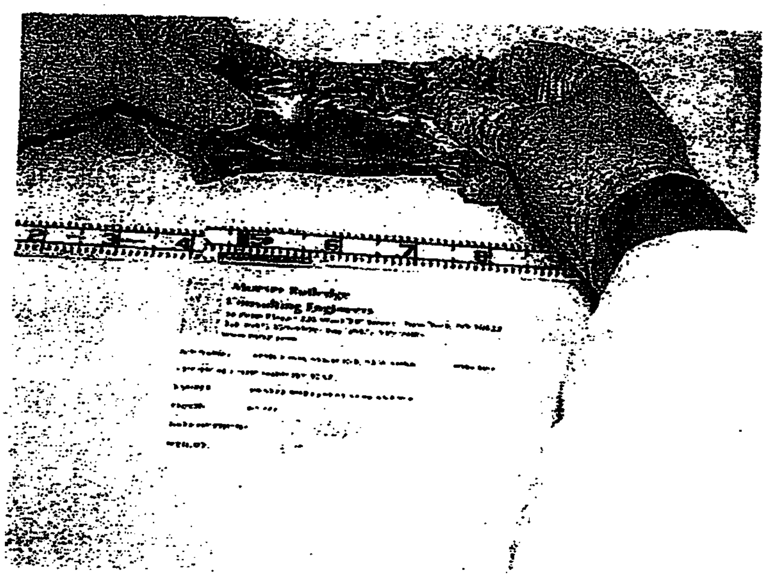


Willis/Semet Syracuse — New York			
Parsons Liverpool — New York			
MUESER RUTLEDGE CONSULTING ENGINEERS 14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122			
SCALE –	MADE BY: SOHJ CHKD BY: DRG	DATE: 11/16/2005 DATE: 11/16/2005	FILE NO. 9801
Adeka UltraSeal A30			PHOTO NO. 2

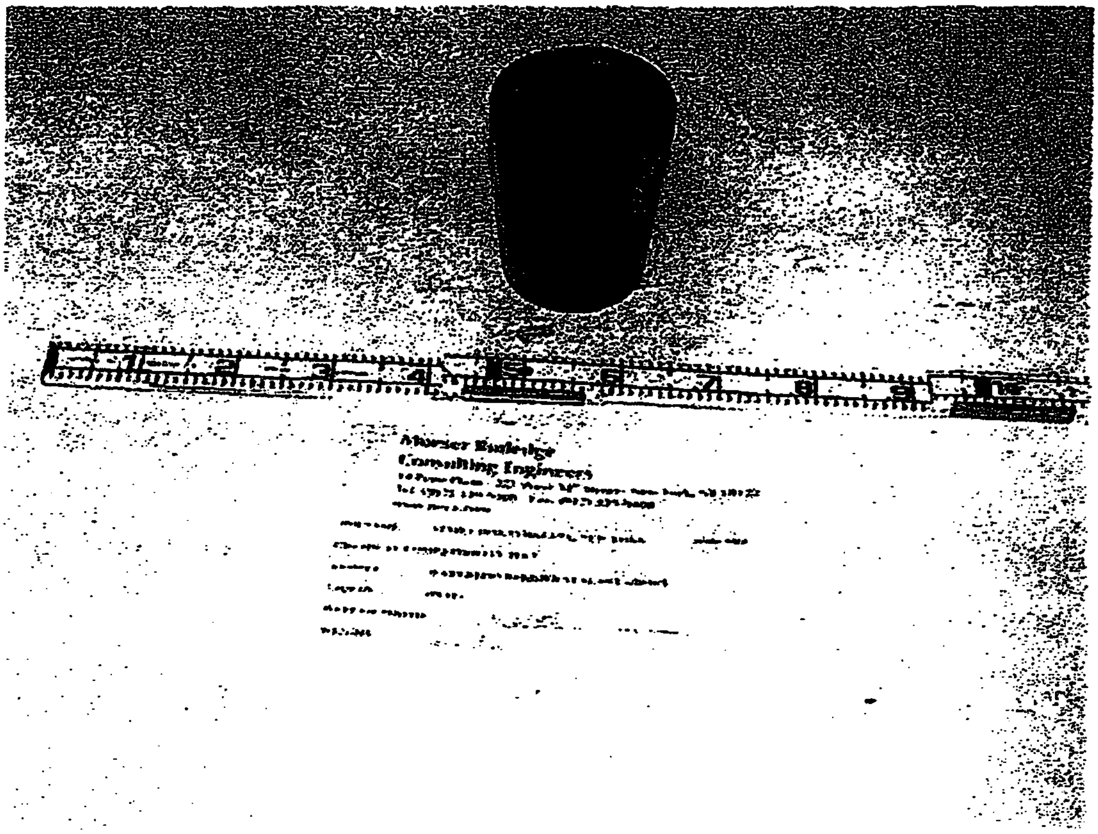


Willis/Semet Syracuse New York		
Parsons Liverpool New York		
MUESER RUTLEDGE CONSULTING ENGINEERS 14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122		
SCALE _	MADE BY: SOHJ DATE: 11/16/2005 CHKD BY: DRG DATE: 11/16/2005	FILE NO. 9801
Adeka UltraSeal P201		PHOTO NO. 3

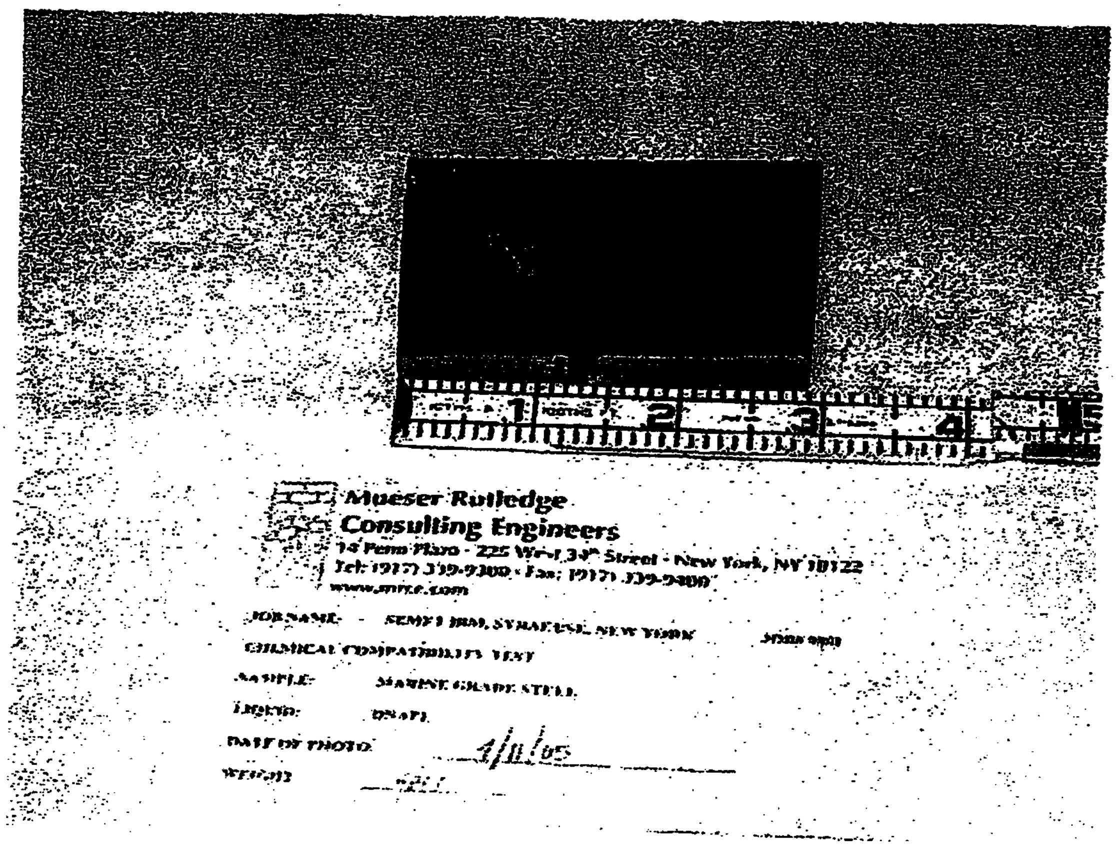




Willis/Semet Syracuse New York		
Parsons Liverpool New York		
MUESER RUTLEDGE CONSULTING ENGINEERS 14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122		
SCALE –	MADE BY: SOHJ DATE: 11/16/2005 CHK'D BY: DRG DATE: 11/16/2005	FILE NO. 9801
Deneef Swellseal WA		PHOTO NO. 4



Willis/Semet			
Syracuse			New York
Parsons			
Liverpool			New York
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122			
SCALE —	MADE BY: SCHJ CHKD BY: DRG	DATE: 11/16/2005 DATE: 11/16/2005	FILE NO. 9801
Waterloo Barrier Grout			PHOTO NO. 5



Willis/Semet	
Syracuse	New York

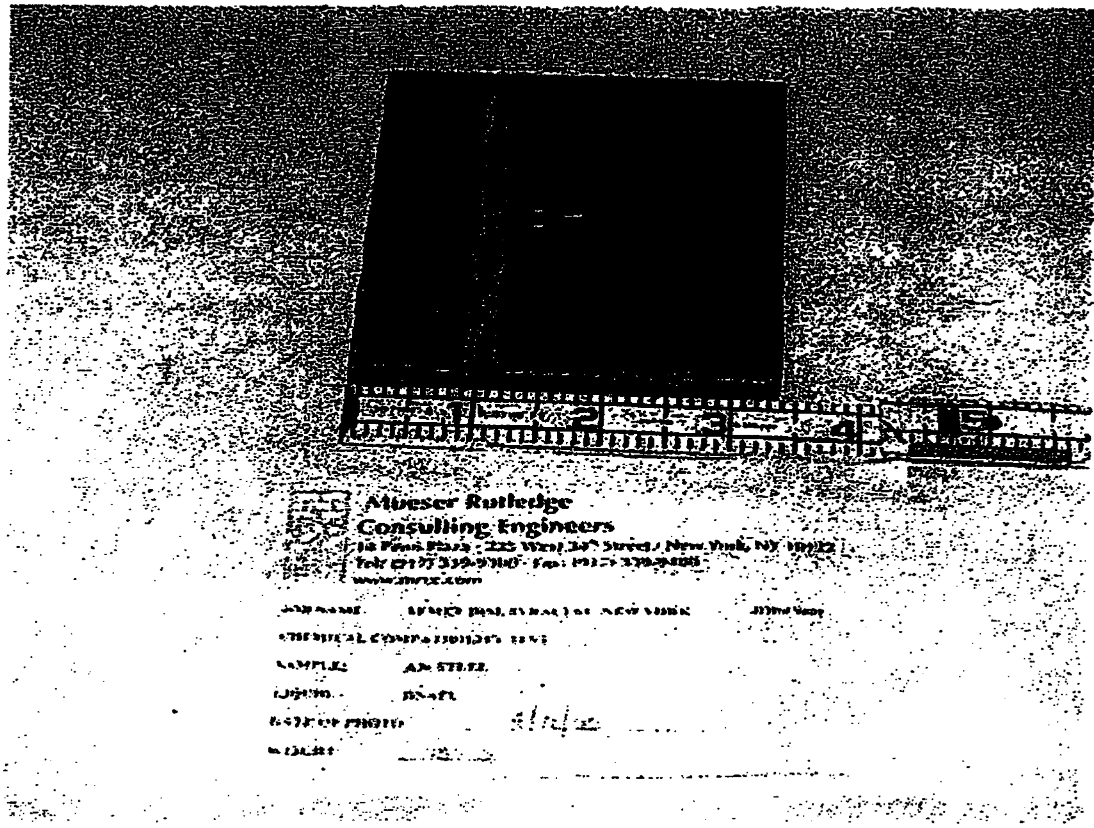
Client	
Liverpool	New York

MUESER RUTLEDGE CONSULTING ENGINEERS

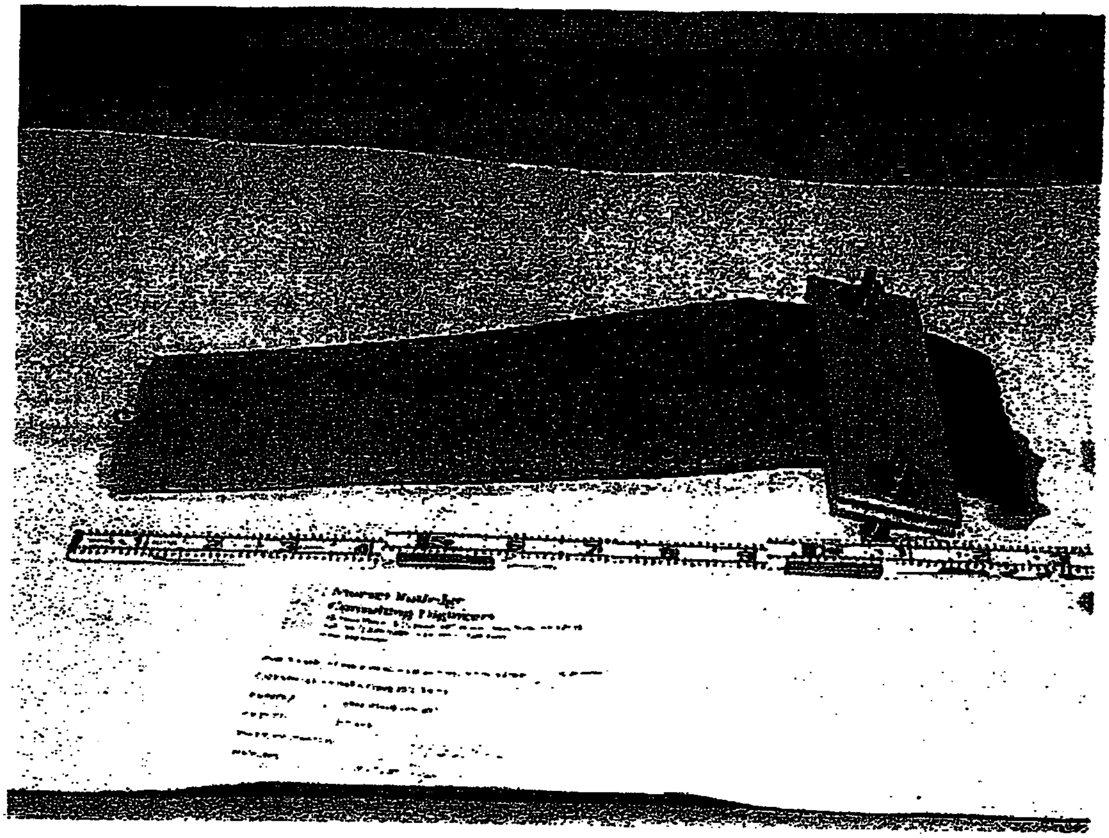
14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122

SCALE	MADE BY: SOHJ	DATE: 11/16/2005	FILE NO.
–	CHKD BY: DRG	DATE: 11/16/2005	9801

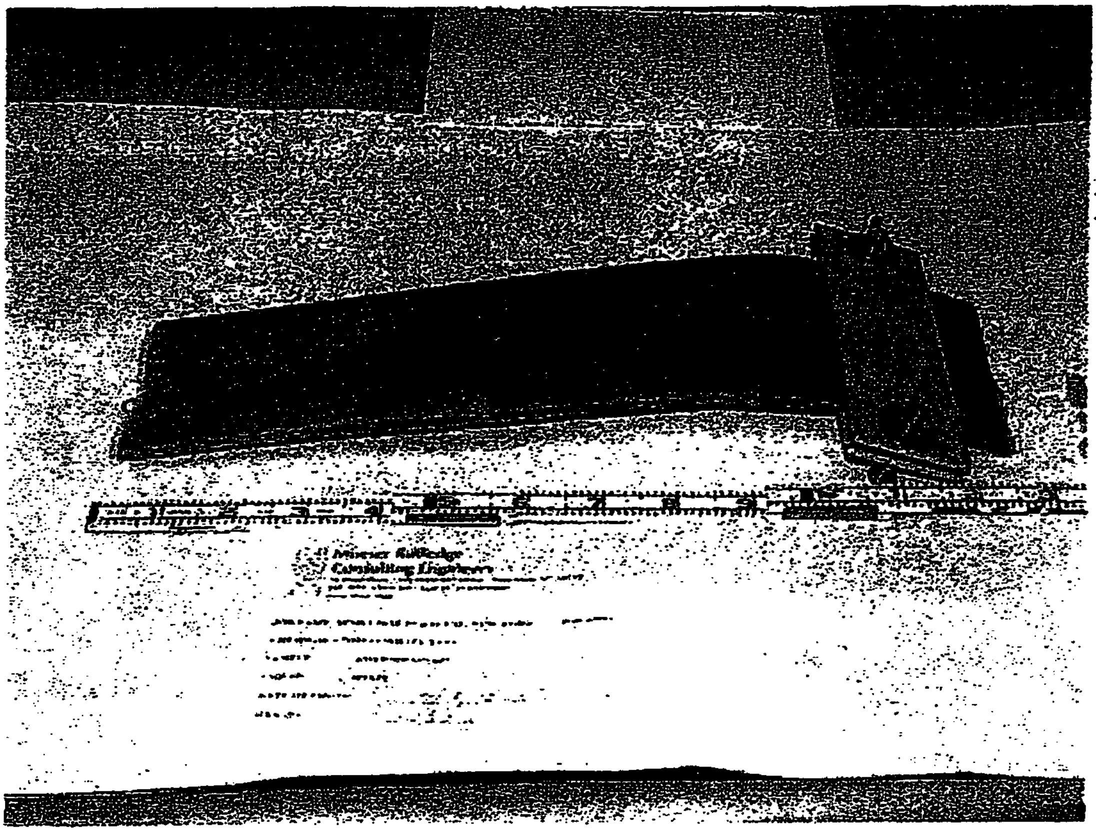
	PHOTO NO.
Marine Steel	6



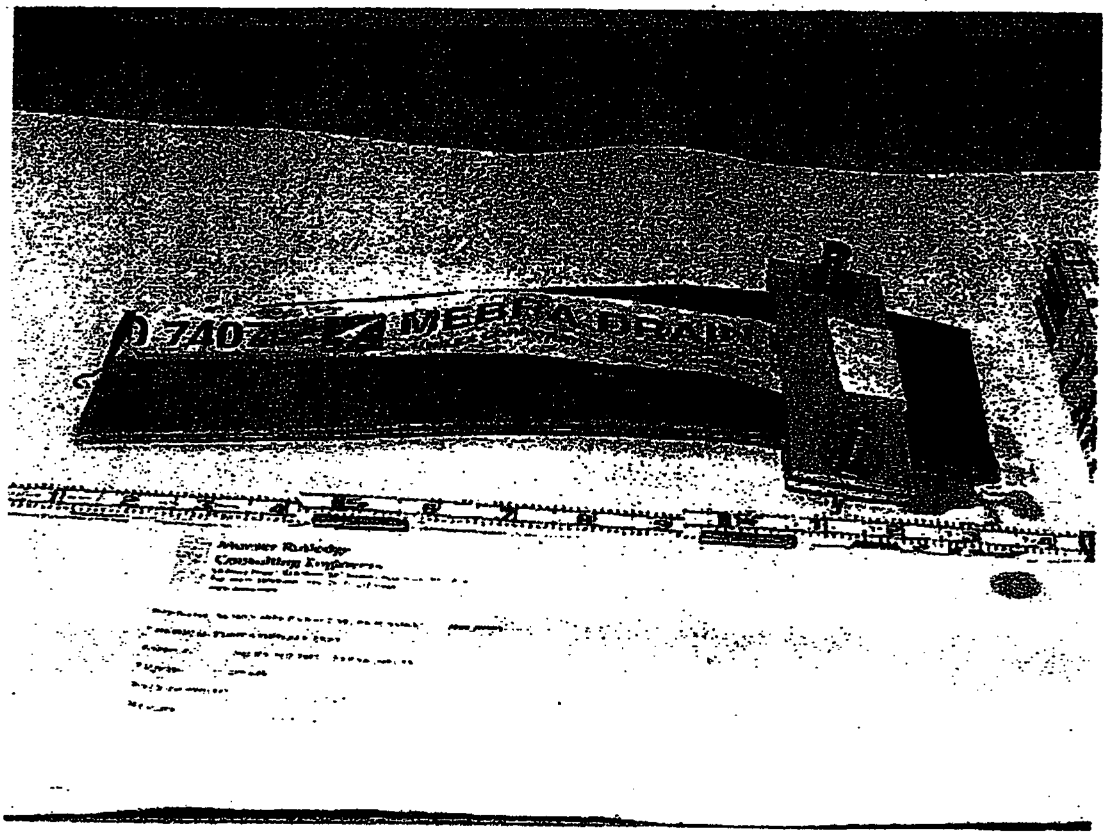
Willis/Semet			
Syracuse			New York
Parsons			
Liverpool			New York
MUESER RUTLEDGE CONSULTING ENGINEERS			
14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122			
SCALE _	MADE BY: SOHJ CHKD BY: DRG	DATE: 11/16/2005 DATE: 11/16/2005	FILE NO. 9801
Steel Sheeting			PHOTO NO. 7



Willis/Semet		
Syracuse		New York
Parsons		
Liverpool		New York
MUESER RUTLEDGE CONSULTING ENGINEERS		
14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122		
SCALE –	MADE BY: SOHJ DATE: 11/16/2005 CHKD BY: DRG DATE: 11/16/2005	FILE NO. 9801
Ameridrain 407		PHOTO NO. 8



Willis/Semet		
Syracuse		New York
Parsons		
Liverpool		New York
MUESER RUTLEDGE CONSULTING ENGINEERS		
14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122		
SCALE —	MADE BY: SOHJ DATE: 11/16/2005 CHKD BY: DRG DATE: 11/16/2005	FILE NO. 9801
Ameridrain 607		PHOTO NO. 9



Willis/Semet

Syracuse — New York

Parsons

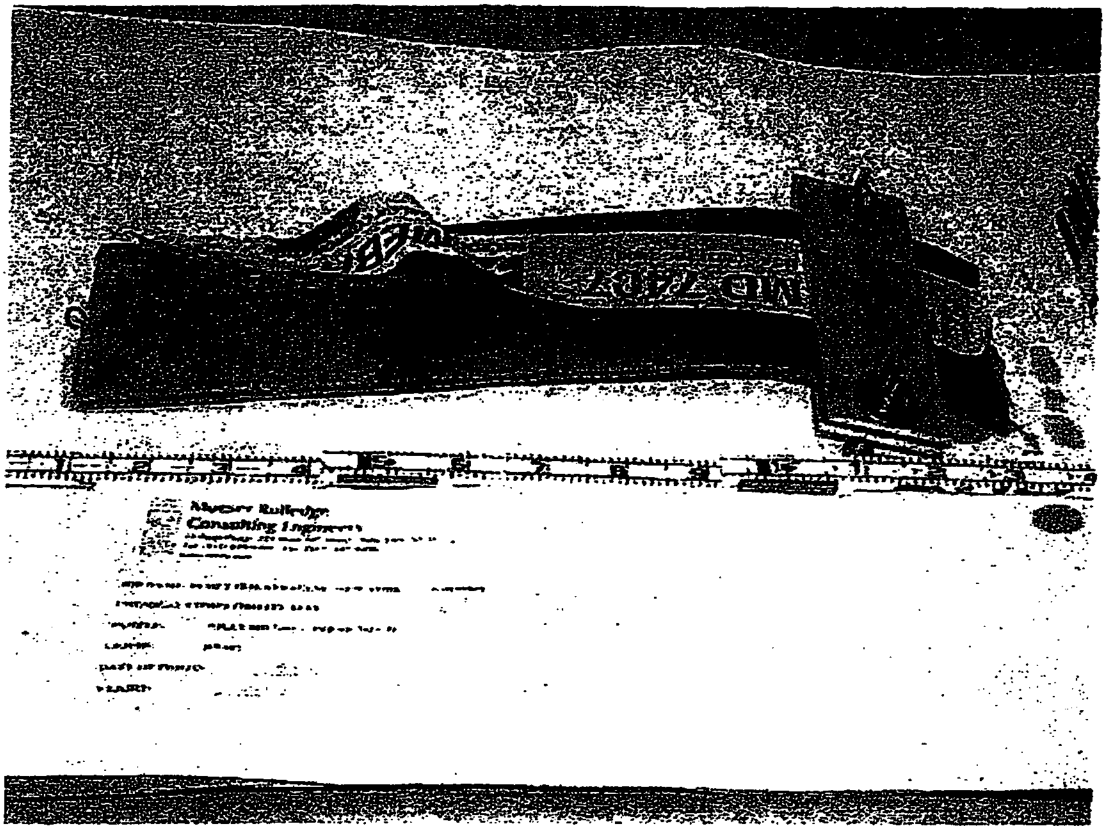
Liverpool — New York

MUESER RUTLEDGE CONSULTING ENGINEERS

14 PENN PLAZA - 225 W. 34th STREET, NY, NY 10122

SCALE	MADE BY: SOHJ CHKD BY: DRG	DATE: 11/16/2005 DATE: 11/16/2005	FILE NO. 9801
–			

Nilex MD 7407 Typar 3351 M	PHOTO NO. 10



Willis/Semet Syracuse New York		
Parsons Liverpool New York		
MUESER RUTLEDGE CONSULTING ENGINEERS 14 PENN PLAZA - 225 W. 34th STREET. NY, NY 10122		
SCALE _	MADE BY: SOHJ DATE: 11/16/2005 CHKD BY: DRG DATE: 11/16/2005	FILE NO. 9801
Nilex MD 7407 Typar 3401 M		PHOTO NO. 11

APPENDIX D

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8260

SYRACUSE

Client: Honeywell
Project: Syracuse, NY
Proj. Desc:
Package#: 9873
Sample: F2568 DL
Sample Description: MRCE NAPL SAMPLE #1
Instrument: HP5973 GCMS#3
Units: mg/Kg Original weight
Number of analytes: 58

Job No.: 1163.002.11180
Certification NY No.: 10155

Collected:
Received: 02/04/05
Prepared: 02/18/05

Matrix: Solid
QC Batch: 021805S3
%Solids:
Sample Size: .51 g
Dilution: 1.96E+06

Parameter	Result	Qual	PQL	Analyzed	Notes
Dichlorodifluoromethane	<9800.	U	9800.	02/18/05	
Chloromethane	<9800.	U	9800.	02/18/05	
Vinyl chloride	<9800.	U	9800.	02/18/05	
Bromomethane	<9800.	U	9800.	02/18/05	
Chloroethane	<9800.	U	9800.	02/18/05	
Trichlorofluoromethane	<9800.	U	9800.	02/18/05	
1,1-Dichloroethene	<4900.	U	4900.	02/18/05	
Methylene chloride	<9800.	U	9800.	02/18/05	
trans-1,2-Dichloroethene	<4900.	U	4900.	02/18/05	
1,1-Dichloroethane	<4900.	U	4900.	02/18/05	
cis-1,2-Dichloroethene	<4900.	U	4900.	02/18/05	
Bromochloromethane	<4900.	U	4900.	02/18/05	
Chloroform	<4900.	U	4900.	02/18/05	
[illegible]Dichloropropane	<4900.	U	4900.	02/18/05	
[illegible]Dichloroethane	<4900.	U	4900.	02/18/05	
1,1,1-Trichloroethane	<4900.	U	4900.	02/18/05	
1,1-Dichloropropene	<4900.	U	4900.	02/18/05	
Carbon tetrachloride	<4900.	U	4900.	02/18/05	
Benzene	35000.		4900.	02/18/05	
Dibromomethane	<4900.	U	4900.	02/18/05	
1,2-Dichloropropane	<4900.	U	4900.	02/18/05	
Trichloroethene	<4900.	U	4900.	02/18/05	
Bromodichloromethane	<4900.	U	4900.	02/18/05	
cis-1,3-Dichloropropene	<4900.	U	4900.	02/18/05	
trans-1,3-Dichloropropene	<4900.	U	4900.	02/18/05	
1,1,2-Trichloroethane	<4900.	U	4900.	02/18/05	
Toluene	<4900.	U	4900.	02/18/05	
1,3-Dichloropropane	<4900.	U	4900.	02/18/05	
Dibromochloromethane	<4900.	U	4900.	02/18/05	
1,2-Dibromoethane	<4900.	U	4900.	02/18/05	
Tetrachloroethene	<4900.	U	4900.	02/18/05	
1,1,1,2-Tetrachloroethane	<4900.	U	4900.	02/18/05	
Chlorobenzene	190000.		4900.	02/18/05	

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
[illegible] - reported value is estimated. D - Result is diluted.
[illegible]oncentration exceeded the calibration range and is estimated.

Authorized: Thomas Alexander
Date: February 18, 2005

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8260

Client: Honeywell
Project: Syracuse, NY
Proj. Desc:
Package#: 9873
Sample: F2568 DL
Sample Description: MRCE NAPL SAMPLE #1
Instrument: HP5973 GCMS#3
Units: mg/Kg Original weight
Number of analytes: 58

Job No.: 1163.002.11180
Certification NY No.: 10155

Collected:
Received: 02/04/05
Prepared: 02/18/05

Matrix: Solid
QC Batch: 021805S3
%Solids:
Sample Size: .51 g
Dilution: 1.96E+06

Parameter	Result	Qual	PQL	Analyzed	Notes
Ethylbenzene	<4900.	U	4900.	02/18/05	
Bromoform	<4900.	U	4900.	02/18/05	
Xylene (total)	<4900.	U	4900.	02/18/05	
Styrene	<4900.	U	4900.	02/18/05	
1,1,2,2-Tetrachloroethane	<4900.	U	4900.	02/18/05	
1,2,3-Trichloropropane	<4900.	U	4900.	02/18/05	
Isopropylbenzene	<4900.	U	4900.	02/18/05	
Bromobenzene	<4900.	U	4900.	02/18/05	
n-Propylbenzene	<4900.	U	4900.	02/18/05	
2-Chlorotoluene	<4900.	U	4900.	02/18/05	
4-Chlorotoluene	<4900.	U	4900.	02/18/05	
1,3,5-Trimethylbenzene	<4900.	U	4900.	02/18/05	
tert-Butylbenzene	<4900.	U	4900.	02/18/05	
n-Butylbenzene	<4900.	U	4900.	02/18/05	
1,2,4-Trimethylbenzene	<4900.	U	4900.	02/18/05	
sec-Butylbenzene	<4900.	U	4900.	02/18/05	
1,3-Dichlorobenzene	8500.		4900.	02/18/05	
1,4-Dichlorobenzene	100000.		4900.	02/18/05	
p-Isopropyltoluene	<4900.	U	4900.	02/18/05	
1,2-Dichlorobenzene	100000.		4900.	02/18/05	
1,2-Dibromo-3-chloropropane	<9800.	U	9800.	02/18/05	
1,2,4-Trichlorobenzene	<9800.	U	9800.	02/18/05	
Naphthalene	<9800.	U	9800.	02/18/05	
Hexachlorobutadiene	<9800.	U	9800.	02/18/05	
1,2,3-Trichlorobenzene	<9800.	U	9800.	02/18/05	

Surrogate	%R	Qual	%R Limits
Dibromofluoromethane (surrogate)	108		76-124
1,2-Dichloroethane-d4 (surrogate)	95		69-131
Toluene-d8 (surrogate)	102		80-120
Bromofluorobenzene (surrogate)	103		57-132

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: Thomas Alexander
Date: February 18, 2005 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8270

Client: Honeywell
Project: Syracuse, NY
Proj. Desc:
Package#: 9873
Sample: F2568 DL
Sample Description: MRCE NAPL SAMPLE #1
Instrument: HP5972A GCMS#5
Units: mg/Kg Original weight
Number of analytes: 65

Job No.: 1163.002.11180
Certification NY No.: 10155

Collected:
Received: 02/04/05
Prepared: 02/18/05

Matrix: Solid
QC Batch: 021805S3
%Solids:
Sample Size: .534 g
Dilution: 1.25

Parameter	Result	Qual	PQL	Analyzed	Notes
bis(2-Chloroethyl)ether	<23000.	U	23000.	02/22/05	
Phenol	<23000.	U	23000.	02/22/05	
2-Chlorophenol	<23000.	U	23000.	02/22/05	
1,3-Dichlorobenzene	27000.		23000.	02/22/05	
1,4-Dichlorobenzene	300000.		23000.	02/22/05	
Benzyl alcohol	<23000.	U	23000.	02/22/05	
1,2-Dichlorobenzene	230000.		23000.	02/22/05	
2-Methylphenol	<23000.	U	23000.	02/22/05	
bis(2-Chloroisopropyl)ether	<23000.	U	23000.	02/22/05	
4-Methylphenol	<23000.	U	23000.	02/22/05	
N-Nitroso-di-n-propylamine	<23000.	U	23000.	02/22/05	
Hexachloroethane	<23000.	U	23000.	02/22/05	
Nitrobenzene	<23000.	U	23000.	02/22/05	
Isophorone	<23000.	U	23000.	02/22/05	
2-Nitrophenol	<23000.	U	23000.	02/22/05	
2,4-Dimethylphenol	<23000.	U	23000.	02/22/05	
bis(2-Chloroethoxy)methane	<23000.	U	23000.	02/22/05	
Benzoic acid	<120000.	U	120000.	02/22/05	
2,4-Dichlorophenol	<23000.	U	23000.	02/22/05	
1,2,4-Trichlorobenzene	<23000.	U	23000.	02/22/05	
Naphthalene	<23000.	U	23000.	02/22/05	
4-Chloroaniline	<23000.	U	23000.	02/22/05	
Hexachlorobutadiene	<23000.	U	23000.	02/22/05	
4-Chloro-3-methylphenol	<23000.	U	23000.	02/22/05	
2-Methylnaphthalene	<23000.	U	23000.	02/22/05	
Hexachlorocyclopentadiene	<23000.	U	23000.	02/22/05	
2,4,6-Trichlorophenol	<23000.	U	23000.	02/22/05	
2,4,5-Trichlorophenol	<120000.	U	120000.	02/22/05	
2-Chloronaphthalene	<23000.	U	23000.	02/22/05	
2-Nitroaniline	<120000.	U	120000.	02/22/05	
Dimethyl phthalate	<23000.	U	23000.	02/22/05	
Acenaphthylene	<23000.	U	23000.	02/22/05	
2,6-Dinitrotoluene	<23000.	U	23000.	02/22/05	

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized:
Date: February 22, 2005 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8270

Client: Honeywell
Project: Syracuse, NY
Proj. Desc:
Package#: 9873
Sample: F2568 DL
Sample Description: MRCE NAPL SAMPLE #1
Instrument: HP5972A GCMS#5
Units: mg/Kg Original weight
Number of analytes: 65

Job No.: 1163.002.11180
Certification NY No.: 10155

Collected:
Received: 02/04/05
Prepared: 02/18/05

Matrix: Solid
QC Batch: 021805S3
%Solids:
Sample Size: .534 g
Dilution: 1.25

Parameter	Result	Qual	PQL	Analyzed	Notes
3-Nitroaniline	<120000.	U	120000.	02/22/05	
Acenaphthene	<23000.	U	23000.	02/22/05	
2,4-Dinitrophenol	<120000.	U	120000.	02/22/05	
4-Nitrophenol	<120000.	U	120000.	02/22/05	
Dibenzofuran	<23000.	U	23000.	02/22/05	
2,4-Dinitrotoluene	<23000.	U	23000.	02/22/05	
Diethyl phthalate	<23000.	U	23000.	02/22/05	
Fluorene	<23000.	U	23000.	02/22/05	
4-Chlorophenyl phenyl ether	<23000.	U	23000.	02/22/05	
4-Nitroaniline	<120000.	U	120000.	02/22/05	
4,6-Dinitro-2-methylphenol	<120000.	U	120000.	02/22/05	
N-Nitrosodiphenylamine	<23000.	U	23000.	02/22/05	
4-Bromophenyl phenyl ether	<23000.	U	23000.	02/22/05	
Hexachlorobenzene	<23000.	U	23000.	02/22/05	
Pentachlorophenol	<120000.	U	120000.	02/22/05	
Phenanthrene	<23000.	U	23000.	02/22/05	
Anthracene	<23000.	U	23000.	02/22/05	
Di-n-butyl phthalate	<23000.	U	23000.	02/22/05	
Fluoranthene	<23000.	U	23000.	02/22/05	
Pyrene	<23000.	U	23000.	02/22/05	
Butyl benzyl phthalate	<23000.	U	23000.	02/22/05	
3,3'-Dichlorobenzidine	<47000.	U	47000.	02/22/05	
Benzo[a]anthracene	<23000.	U	23000.	02/22/05	
Chrysene	<23000.	U	23000.	02/22/05	
bis(2-Ethylhexyl)phthalate	<23000.	U	23000.	02/22/05	
Di-n-octyl phthalate	<23000.	U	23000.	02/22/05	
Benzo[b]fluoranthene	<23000.	U	23000.	02/22/05	
Benzo[k]fluoranthene	<23000.	U	23000.	02/22/05	
Benzo[a]pyrene	<23000.	U	23000.	02/22/05	
Indeno[1,2,3-cd]pyrene	<23000.	U	23000.	02/22/05	
Dibenz[a,h]anthracene	<23000.	U	23000.	02/22/05	
Benzo[g,h,i]perylene	<23000.	U	23000.	02/22/05	

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - reported value is estimated. D - Result is diluted.
E - concentration exceeded the calibration range and is estimated.

Authorized: [signature]
Date: February 22, 2005 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

O'Brien & Gere Laboratories, Inc.

Analytical Results
Method: 8270

Client: Honeywell
Project: Syracuse, NY
Proj. Desc:
Package#: 9873
Sample: F2568 DL
Sample Description: MRCE NAPL SAMPLE #1
Instrument: HP5972A GCMS#5
Units: mg/Kg Original weight
Number of analytes: 65

Job No.: 1163_002.11180
Certification NY No.: 10155

Collected:
Received: 02/04/05
Prepared: 02/18/05

Matrix: Solid
QC Batch: 021805S3
%Solids:
Sample Size: .534 g
Dilution: 1.25

Surrogate	%R	Qual	%R Limits
2-Fluorophenol (surrogate)	0		37-120
Phenol-d5 (surrogate)	0		45-120
2,4,6-Tribromophenol (surrogate)	0		40-142
Nitrobenzene-d5 (surrogate)	0		44-120
2-Fluorobiphenyl (surrogate)	0		51-120
Terphenyl-d14 (surrogate)	0		34-150

Notes:

Surrogate was diluted.

B - Analyte detected above the PQL in the associated Prep Blank.
- Outside control limits U - Undetected at the reported level.
J - Reported value is estimated. D - Result is diluted.
E - Concentration exceeded the calibration range and is estimated.

Authorized: [signature]
Date: February 22, 2005 Thomas Alexander

5000 Brittonfield Parkway / Suite 300, Box 4942 / Syracuse, NY 13221 / (315) 437-0200

D'Brien & Gere
Laboratories, Inc.

Analytical Results
Wet Chemistry

ient: Honeywell
oject: Syracuse, NY
oj. Desc:
ckage#: 9873
mple: F2568
mp. Description: MRCE NAPL SAMPLE #1

Job No.: 1163.002.11180
Certification NY No.: 10155

Collected:
Received: 02/04/05 09:40
Matrix: Liquid
Number of Analytes: 1

rameter	Result	Q	Units	Method	PQL	Analyzed	QC Batch	Dil	Note
	5.1		STD units	EPA 9045C	.10	02/07/05 10:00	020705S11	1	17

tes:
7 : pH analyzed outside the recommended "Analyze immediately" holding time.

Analyte detected above the PQL in the associated Prep Blank
Undetected at the reported level.
Reported value is estimated. D- Result is diluted.
Concentration exceeded the calibration range and is estimated.

Authorized: [signature]
Date: February 16, 2005 Thomas Alexander

PACKAGE/SAMPLE SCHEDULE
Tuesday, Feb 8, 2005
Project Manager: TAA
Page 1 of 1

W.C.
MV
GC
Ext
MSV
MSS

Pre

PACKAGE

Job No.: 1163.2.11180
Client: Honeywell
Scheduled: Feb-08, 2005
Package number: 2873
Samples: F2568 - 2568
Certification: 10155
Comments: Wear Gloves/Use Hood/Sample in Walk in Cooler

Project: Syracuse, NY
Pkg Due: Feb-18, 2005
QC Level: 1
Number of samples: 1

app 2.4

Description:
Received: Feb-04, 2005
QC Control Limits: 2004

SCHEDULED SAMPLES

Samples	# of	Group	Parameter	ID	Method	Matrix	Schedule Comments
F2568 - 2568	V 1	[WC]	pH	3324	EPA 9045C	Solid	
F2568 - 2568	V 1	8270S[GCMS SV]					VOAs first waste dilution
F2568 - 2568	V 1	8260S[GCMS VOA]					VOAs first Waste Dilution

LIST OF ALL SAMPLES IN PACKAGE:

Sample	Description	Type	Collected	Received	Sample Log Comments	MA	Special codes: 1	2	3
F2568	MRCE NAPL SAMPLE #1			02/04/2005 09:40	Organic liquid VOAs Lost	12			

Mueser Rutledge
Consulting Engineers
14 Penn Plaza · 225 West 34th Street · New York, NY 10122
Tel: (917) 339-9300 · Fax: (917) 339-9400
www.mrce.com

LETTER OF TRANSMITTAL

Date: February 3, 2005
To: Tom Alexander
Company: OBG Laboratories
Address: 5000 Britton Field Parkway
East Syracuse, NY 13057

From: Jim Tantalla
Project: Semet
MRCE File: 9801

Fax:
Phone:

Sent via: ___Mail ___Fax
_X_FedEx ___Messenger

Message:

Tom,

Please find enclosed a groundwater sample for testing. The f

- VOC
- SVOC
- pH

Our client on this project is Honeywell, who should be bille ... e at Parsons' direction. Don't hesitate to call me at (917) 339-9424

Thanks,

Jim.

1163.2
Sample #
8260S
8270S
pH ~~9450~~
9045
Temp. 3.2°C
pit in Cooler

9673

Mueser Rutledge Consulting Engineers

By: [signature]
Jim Tantalla

Copy to: H Scott 2/4/05 9.40
18°C ~~Wet Iced~~ NO Ice

319

1000

FedEx Express **US Airbill**

FedEx Tracking Number 8468 3316 0690

Recipient's Copy

NO POUCH NEEDED.

RECIPIENT: PEEL HERE

1 From This portion can be removed for Recipient's records.

Date ... FedEx Tracking Number 846833160690.

Sender's Name ... Phone 717 337-9300

Company ... CONSULTING ENG

Address ... ST.

City ... State NY ZIP 10122

2 Your Internal Billing Reference 2191

3 To

Recipient's Name ... Phone

Company

Recipient's Address

Address

City ... State ... ZIP ...057

8468 3316 0690

4a Express Package Service — Packages up to 150 lbs.

FedEx Priority Overnight | FedEx Standard Overnight | FedEx First Overnight

FedEx 2Day | FedEx Express Saver

4b Express Freight Service — Packages over 150 lbs.

FedEx 1Day Freight | FedEx 2Day Freight | FedEx 3Day Freight

5 Packaging

FedEx Envelope | FedEx Pak | FedEx Box | FedEx Tube | Other

6 Special Handling

SATURDAY Delivery | HOLD Weekday at FedEx Location | HOLD Saturday at FedEx Location

Does this shipment contain dangerous goods?

No | Yes | Yes | Dry Ice

Cargo Aircraft Only

7 Payment Bill to:

Sender | Recipient | Third Party | Credit Card | Cash/Check

[redacted]

Total Packages | Total Weight | Total Charges

8 Sign to Authorize Delivery Without a Signature

Questions? Visit our Website at fedex.com

466

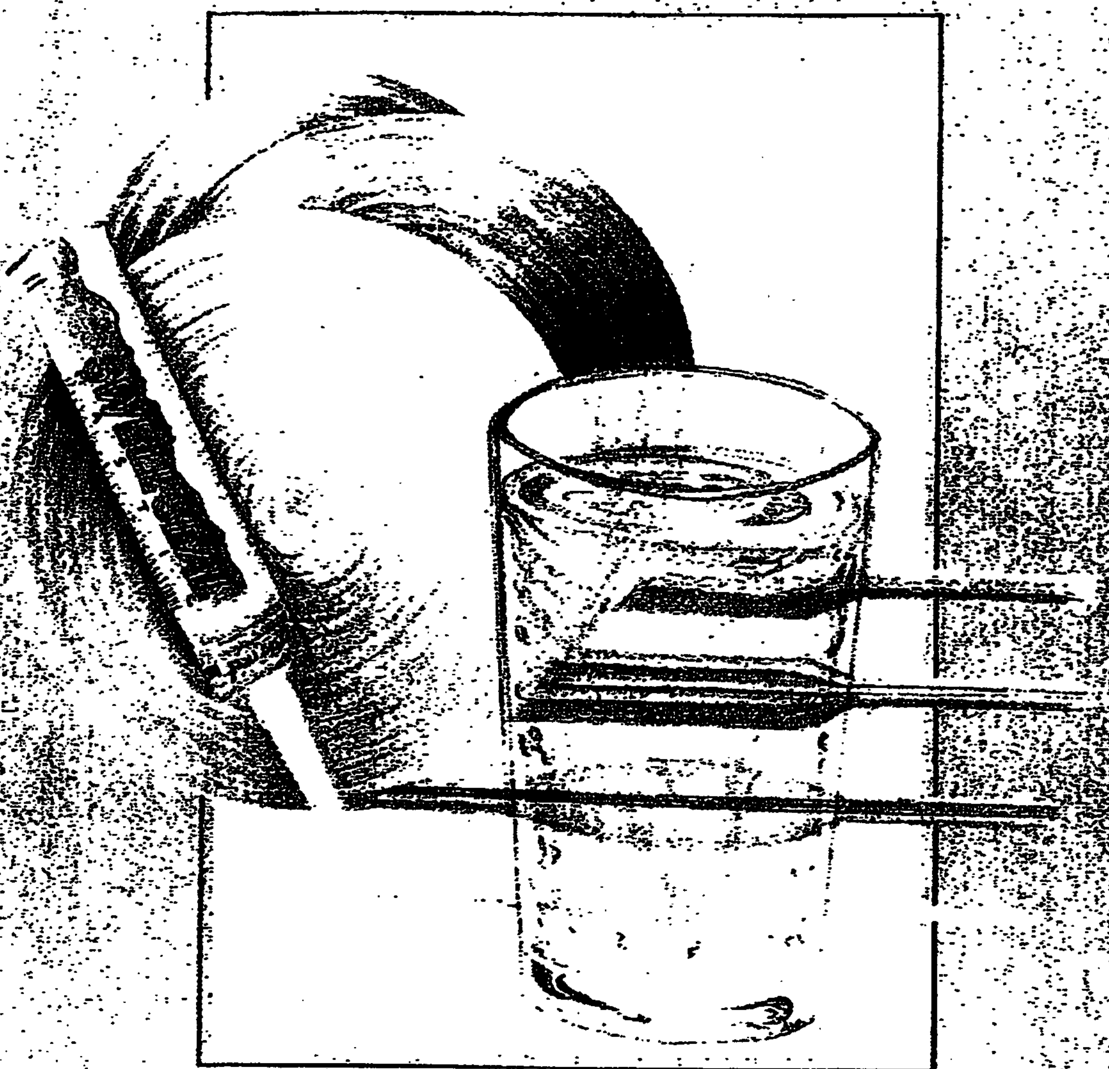
O'BRIEN & GERE LABORATORIES, INC.

From: Christopher Calkins
To: Thomas Alexander
Date: 2/3/05 8:14:25 AM
Subject: DNAPL Characterization

Mueser Rutledge will be sending you a sample of the DNAPL from Willis Avenue for VOCs and SVOCs analyses. This characterization is in support of the compatability testing program for the Willis/Semet IRM. I told them that you would be able to find a home for these costs on an existing P.O. If you don't have a home, can you contact Al and ask him how he would prefer to handle it. Let me know if you have any questions. Thanx.

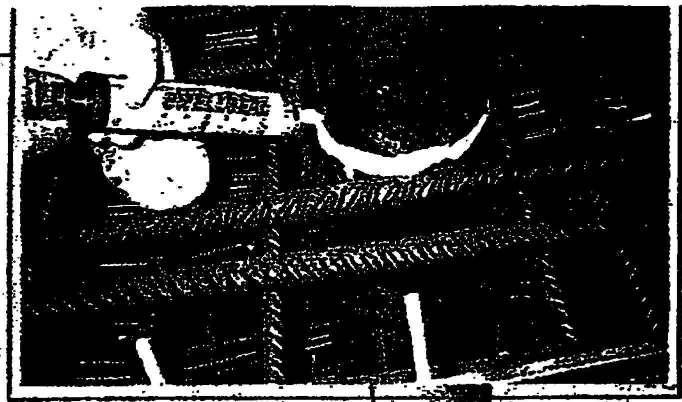
APPENDIX E

SWELLSEAL

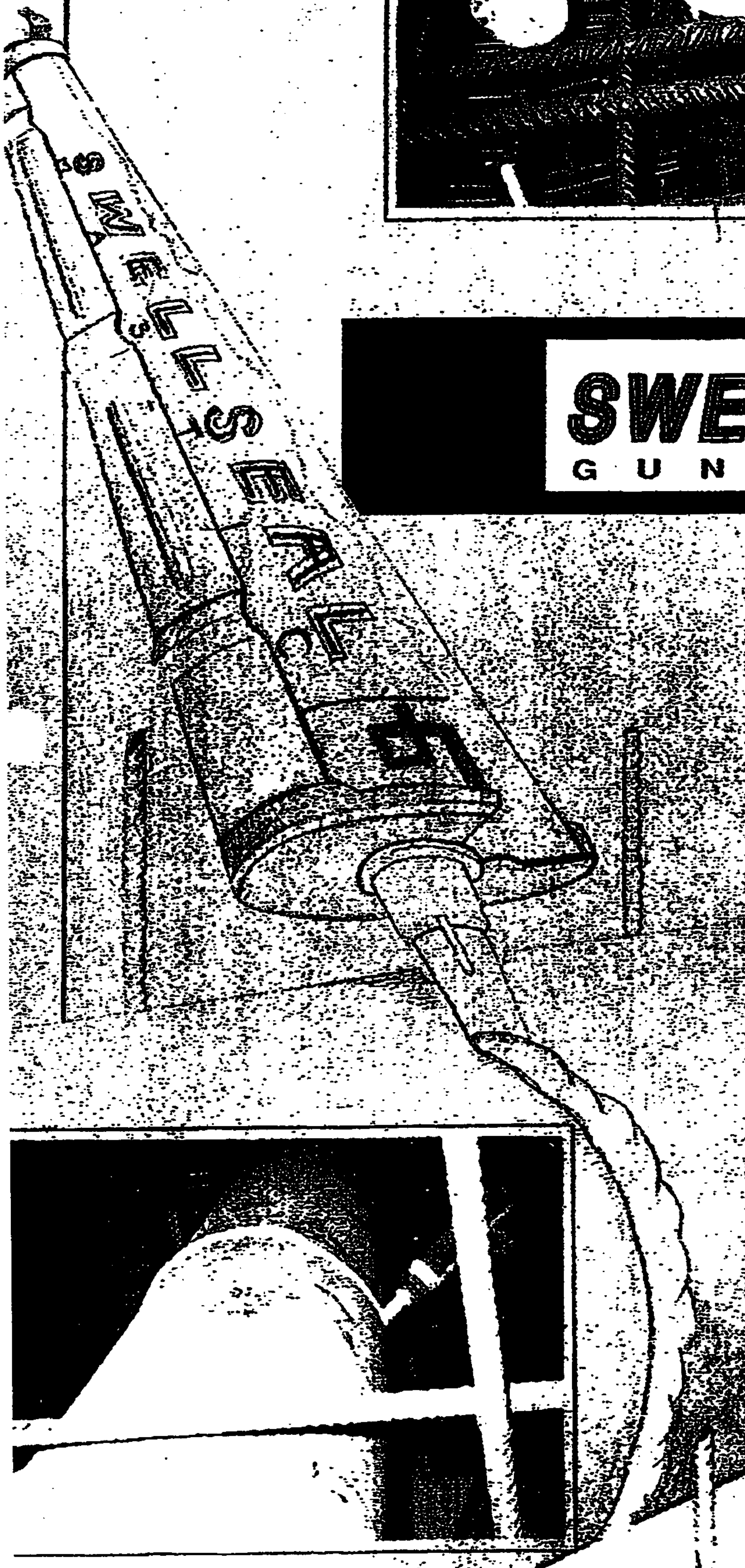


Hydrophilic rubber joint for waterproofing of construction joints, cold joints and pipe penetrations.

de neef® Construction Chemicals, Inc.



SWELLSEAL
GUN GRADE



Swellseal Gun Grade is a gun applied, one-component, hydro-reactive, expansive, sealant for waterproofing joints in concrete.
Swellseal Gun Grade expands up to min. 250% in contact with water to create a durable waterstop with longlasting adhesive and hydro-swelling properties.

Adhesive properties

Swellseal Gun Grade has excellent adhesive properties on different surfaces such as concrete, steel, glass, PVC, HDPE etc. The surface can be rough, smooth, damp or dry.

Applications

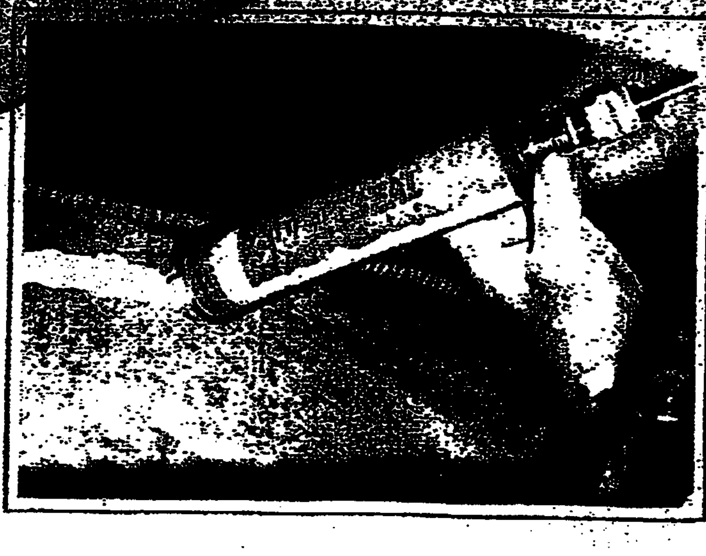
- Waterproofing of irregular cold and construction joints.
- Waterproofing of joints between [illegible] concrete elements (eg. [illegible] manholes, box culverts, [illegible] etc.)
- [illegible] metal, PVC, [illegible]
- [illegible] of H - beams penetrating [illegible] floor slabs etc.
- [illegible]aterproofing of irregular concrete (eg. joints between slurry wall and floor slab).
- Adhesion of waterstops on an irregular surface

Advantages

- Easy application with standard caulking gun.
- Excellent adhesive properties on various surfaces.
- High swelling capacity (up to min. 250%) in contact with water.
- Plastic system with continuous contact on an uneven surface.
- Durability superior to the expected life of concrete.

Packaging

21 oz. Sausage



Swellseal Joint is a hydrophilic rubber joint for waterproofing of pipe penetrations, underground precast concrete elements, construction joints, cold joints, etc.

The orange component of the hydrophilic expansion rubber has a swelling capacity of 600% in contact with water.
The first phase of the expansion is retarded, to allow for use in damp or humid conditions.
Swellseal Joint can be nailed or glued (eg. with Swellseal Gun Grade) to the surface.

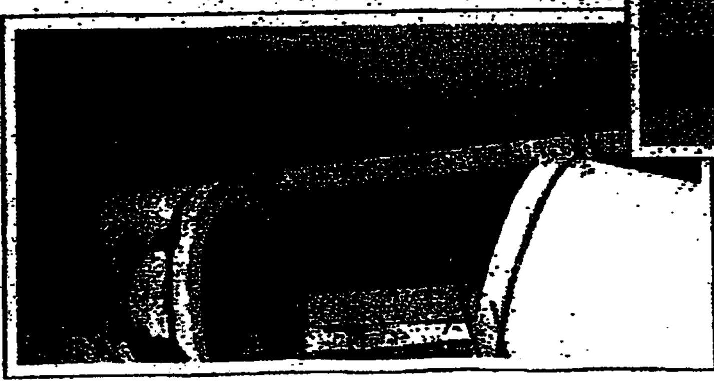
SWELLSEAL
J O I N T

Dimensions

Different profiles available, see individual data sheets.

Packaging

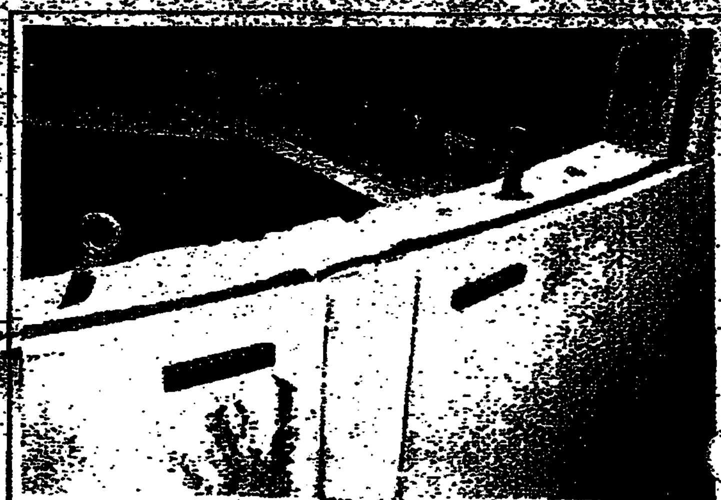
Consult specific data sheets.



Swellseal 8 is a hydrophilic rubber joint for waterproofing of underground precast concrete elements.

Swellseal 8 has a swelling capacity of up to 800% in contact with water.
The first phase of the expansion is retarded to allow for use in damp or humid conditions.
Swellseal 8 is glued to the concrete surface with eg. Swellseal Gun Grade.

SWELLSEAL 8



Dimensions

Different profiles available, see individual data sheets.

Packaging

Consult specific data sheets.

Some Swellseal customers

- Albert Davis Water Treatment Plant, Texas
- International Paper, Louisiana
- Monksville Dam, New Jersey
- David B. Lee Water Treatment Plant, Florida
- Esso Oil Company
- Belgian Railroad Company
- Philips Electronics, Belgium
- St. Louis Arch Underground Theater, Missouri
- National Bank of Luxemburg
- B. C. Hydro, British Columbia
- Houston Ship Channel, Texas
- City of Everett, Washington WWTP
- Roosevelt Building, Seattle, Washington

IMPORTANT: For more detailed information, consult the technical data sheets.

de neef®

Construction Chemicals, Inc.

5610 Brystone Dr. • Houston, TX 77041 • PH: (713) 896-0123 • FAX: (713) 849-3340

WEB: http://www.deneef.com • E-mail: info@deneef.com

de neef ® Construction Chemicals Inc.

Swellseal Gungrade WA

Caulk applied one-component, hydro swelling mastic for sealing smooth and irregular construction joints and pipe penetrations in wet or underwater applications.

Field of application

Swellseal Gungrade WA is used for the:
- Sealing of rough and smooth construction joints of in-situ cast concrete in wet and underwater applications.
- Sealing joints between precast segments in wet or underwater applications (e.g. manholes, box culverts, cable ducts and pipes)
- Sealing of the locks between sheet piles.

Advantages

- Solvent free.
- Due to its special formulation, Swellseal Gungrade WA can be applied onto wet surfaces or in underwater applications.
- Swellseal Gungrade WA adheres to concrete, PVC, HDPE, steel, fibreglass,....
- The excellent filling and adhesion properties of the product provide a first line filling of cracks and voids, even on lightly humid, smooth or rough surfaces.
- In contact with water Swellseal Gungrade will expand to about 200% of it's original volume.
- Flexible system, which adapts to the irregular surface of the substrate.
- Easy application with standard caulking gun.
- Durable: will exceed the construction's life.
- Good chemical resistance (*).
- Resistant to petroleum products, mineral and vegetable oils and greases.

Description

Swellseal Gungrade WA is a one component, polyurethane based, solvent free, hydroswelling mastic, supplied in cartridges and aluminium sausages, for the sealing of expansion joints and around pipe penetrations.

Swellseal Gungrade WA cures and swells in the presence of moisture. Curing Time is dependent on temperature and humidity conditions, i.e. curing time will reduce if RH and °F are higher.

Swellseal Gungrade WA will become firm in 24-36 hours.

Performance is not affected by the curing time.

Application

Swellseal Gungrade is preferably applied onto a dust-free concrete surface. The surface can be rough or smooth, moist or dry. Installation during heavy rain or in prolonged contact with water results in a premature swelling of the strip, which should be avoided.

5610 Brystone Drive, Houston, Texas 77041 • Ph: 713-896-0123 • Fax: 713-849-3340 • www.deneef.com

Application method:

For 10.5 oz. Cartridges:
Break the moisture proofing aluminium foil on the top of the cartridge and remove the seamer from the bottom. Screw on the nozzle and cut diagonally at the appropriate position. Place the cartridge into caulking gun

For 20 oz. Sausages:
Put the sausage in the empty tube of the caulking gun and cut 1/8 inch off the top of the sausage. Close the tube and install the nozzle. Nozzles are supplied with appropriate opening.

Swellseal Gungrade WA is applied in an uninterrupted band (minimum 3/8 inch wide and high), placed with a caulking gun in the middle of the joint or prefab element.

Concrete cover should be at least 3 inches on both sides, in order to avoid cracks from pressure of swelling Swellseal Gungrade.

Technical data/ properties

Property	Value	Norm
Solids	100%	
Uncured		
Viscosity	Gel / Paste	
Density (at 20°C)	Approx. 90 lbs/cu.ft	ASTM D-3574-95
Slump in vertical applications	1/8 inch	
Hand dry (at 68°F and 60% rel. humidity)	10 h	
Flash Point	> 266 °F	ASTM D-93
Cured (7 days at 25°C, 10 mm Thick)		
Elongation at break	Approx. 625%	ASTM D-3574-95
Tensile strength	Approx. 312 psi	ASTM D-412
Resistance to hydrostatic pressure	Up to 492 feet of water column	Test DNC
Swelling capacity in contact with water	Swells to approx. 200% of its original dry volume	Test report KUL University

Appearance

During application pasty, after curing rubbery.
Colour: white.

Consumption

The consumption of Swellseal Gungrade WA per linear foot depends on the quality of the surface of the concrete.

	Width (of the joint)	Consumption
Cartridges 10.5 oz.	¼ inch	25 – 35 ft.
	5/16 inch	12 – 15 ft.
	3/8 inch	approx. 10 ft.
Cartridges 20 oz.	¼ inch	50 – 70 ft.
	5/16 inch	24 – 30 ft.
	3/8 inch	approx. 20 ft.

Packaging

10.5 oz. cartridge	20 oz. sausage
12 per carton 15 lbs. net	12 per carton 24 lbs. net
1 pallet = 140 cartons 2100 lbs.	1 pallet = 40 cartons 960 lbs.
Weight per cartridge: 1.2 lbs. gross 1.1 lbs. net	Weight per sausage: 2.2 lbs. gross 2.0 lbs. net

Storage

Minimum 12 months in a dry place at temperatures between 40°F and 85°F.
See shelf life information on the packaging.

Healthy & Safety

Consult the relevant Material Health and Safety Data Sheet.

(*) For chemical resistances please contact your De NEEF Representative.

Product Warranty

De Neef Construction Chemicals, Inc. products are warranted under the following policy:
All recommendations, statements and technical data contained herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty either expressed or implied. User shall rely on his or her own information and tests to determine suitability of this product for the intended use and user assumes all risk and liability resulting from his or her use of the product. All information and statements are intended for persons having the required skill and know-how and do not relieve the user from verifying the suitability of the information and statements given for a specific purpose prior to use. Seller's and manufacturer's sole responsibility shall be to replace that portion of the product of this manufacturer which proves to be defective. Neither seller nor manufacturer shall be liable to buyer or any third person for any injury, loss or damage directly or indirectly resulting from use or inability to use this product. Recommendations or statements other than those contained in a written agreement signed by an officer of the manufacturer shall not be binding upon the manufacturer.

04/02/04

EMERGENCY RESPONSE – CALL CHEMTREC 800/424-9300

de neef ®Construction Chemicals Inc.

5610 Brystone Drive, Houston, Texas 77041 • Ph: 713-896-8123 • Fax: 713-849-3340 • www.deneef.com

ADEKA ULTRA SEAL

A-30

OCM, Inc.

Sales Information: (847) 955-9700
Technical Information: (800) 999-3959
Contact Local Representative:

Properties	A-30 Resin	A-30 Catalyst
Appearance	Clear Liquid	Clear Liquid
SP (72° F.)	1.05	1.09
Viscosity (MPa.x/77° F).	2000~3000	300~800
Mixing Ratio (resin:catalyst)	15:1	
Pot life 50% RH (70~75 deg.F.)	1~2 Hours	
Gel time 50% RH (70~75 deg.F.)	5~6 Hours	
Cure time 50% RH (70~75 deg.F.)	12~18 Hours	

ADEKA ULTRA SEAL A-30 - Improved waterstop system for sealing sheet pile interlocks prior to driving.

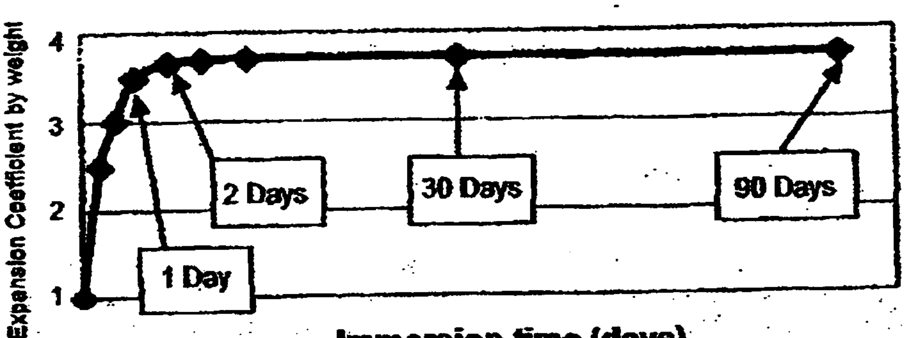
Packaging (2 components - 15:1 ratio) :
A-30 Resin 20 Liter (5.3 gallon) pail - Net - 15 kg (14.28 liters - 3.77 gallons)
A-30 Hardener 1 Liter (1.06 quart) can - Net - 1 kg (0.92 liters - 0.97 quarts)

Total Net = Resin + Catalyst = 15.20 Liters = 4.0 Gallons

Characteristics:

1. Improved chemical resistance and durability even under alkaline ground water conditions.
2. Easy to use two part urethane system. Packaged in ratio amounts. No measuring necessary.
3. The curing process begins when the two components are mixed (chemical cure). Curing is not as dependent on humidity and temperature.
4. Cured A-30 has excellent adhesive strength.
5. A-30 has a high rate of expansion and will withstand approximately 160 foot hydrostatic head (50 meters).

A-30 Expansion Curve



A-30 APPLICATION PROCEDURES:

Application of A-30 and pile driving procedures are identical with published Adeka Ultra Seal A-50 instructions except for mixing procedures and pot life of mixed material.

Basic Application:

1. Thoroughly clean socket (female) side of the interlock. Remove any rust or dirt from the interlock section. Use wire brush or small sander and air blast to remove any debris. Wipe with solvent if any oil or grease is present.
2. LEVEL PILES AND PLUG ENDS (FOAM WORKS WELL). MAINTAIN LEVEL UNTIL A-30 IS CURED.
3. Pour A-30 catalyst (1 liter can) into A-30 resin (5 gallon pail).
4. Mix thoroughly (hand mix by stirring or use power mixer).
5. Pour appropriate amount of A-30 into the level interlock. The amount of A-30 required will vary depending on type of sheet pile. Check with your local representative for recommended coverage.
6. Protect the sheet pile from premature exposure to moisture prior to driving.
7. Drive pile with male or thumb side leading.
8. Drive to final depth at initial driving time. The sheet must be driven to final depth within 2 hours once the pile is in contact with water.

30 Cold Temperature Cure Times in Hours (approximate)

Temperature Degrees F.	Curing Time Hours
0	72
10	48
20	45
30	28
40	18
50	15
60	14

A-30 IS AN IMPROVED VERSION OF A-50

A-30 has good resistance to a number of chemical contaminants. Some chemicals in higher concentrations may affect the performance of A-30. Consult your local Adeka representative before using in a contaminated area. Or call (800) 999-3959 for more information. Visit www.adeka.com for rranty information.

DEKA ULTRA SEAL

KM-STRING

OCM, Inc.

Sales Information: (847) 955-9700
Technical Information: (800) 999-3959
Contact Local Representative:

PRODUCT DESCRIPTION:		
PACKAGING INFORMATION: Available in 4-32mm Diameter		
PHYSICAL PROPERTIES:		
Hardness:	A-33	(JIS K 6253)
Tensile Strength:	6 Mpa	(JIS K 6251)
Elongation (%)	800%	(JIS K 6251)
Change Volume %:	170%	(In House)
Specific Gravity	1.18	(JIS K 6350)
Vulcanisation	YES	
Hydrophilic Agent	Urethane Polymer	

GENERAL DESCRIPTION

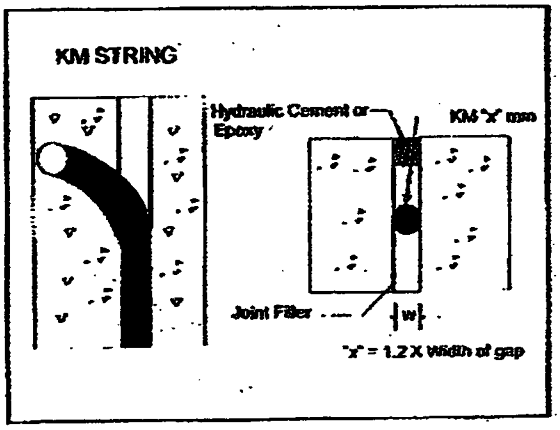
KM String is a chemically modified natural rubber product. A patented process chemically binds a hydrophilic agent to the rubber. This permits the KM String to undergo controlled expansion when in the presence of moisture. This expansion capability provides a "double locking" waterstop. One from rubber's natural resilience and one from the expansion. Any void, within the limits of the product's volume expansion coefficient, will be filled by the expansion of the KM when it is hydrated.

Expansion occurs in all dimensions, diameter and length. Expansion will follow the direction of least resistance. The Volume Expansion Coefficient of 3 times indicates the material will increase 3 times by volume, not 3 times in size. Linear expansion coefficient is approximately 1.45.

KM has excellent durability and resistance to chemicals. It can perform in a wide range of solutions such as salt or cement water. It does not contain any toxic substance or heavy metals and is environmentally safe.

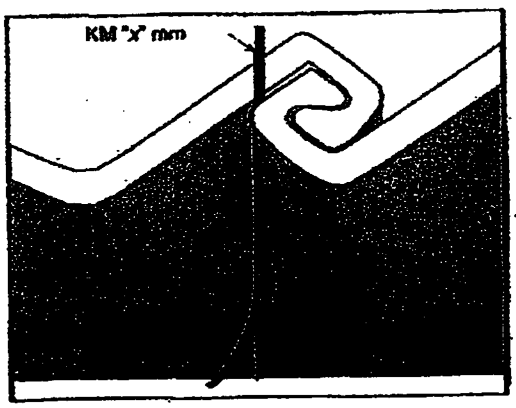
BASIC USE:

Because KM is available in many diameters, it is suitable for waterstopping existing joints of various sizes. The KM string size is determined by the size of the joint. The KM string selected must have a minimum diameter of 1.2 times the joint width. (See Detail No. 1). The string can be easily stretched and inserted into the joint gap with a backer rod insertion tool or a blunt instrument.



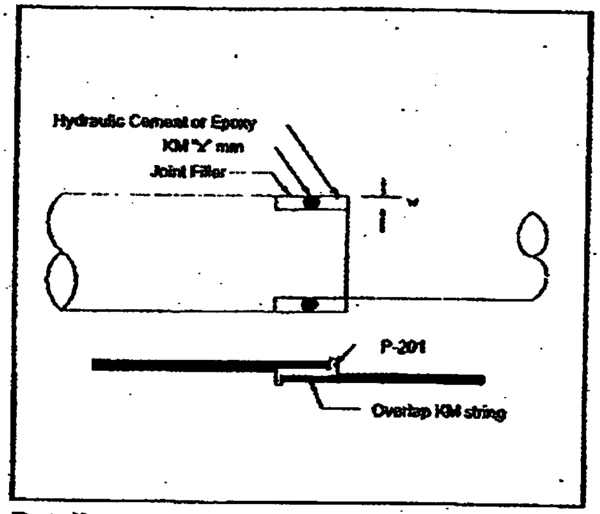
Detail 1

KM is an excellent waterstop for repairing leaks in sheet piles interlocks.
The string size again should be a minimum of 1.2 times the width of the interlock gap. Stretch the string and force into the interlock area. This can be done even if flowing water is present. The natural resilience of the rubber will stop the water and hold the KM in position until expansion has occurred. See detail 2.



Detail 2

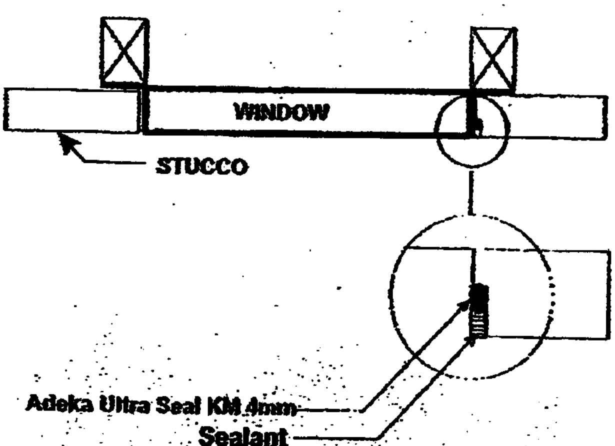
KM string can be used in a variety of applications such as sealing the annular space between two pipes as shown in Detail 3.



Detail 3

Joining two ends of the string can be done by overlapping approximately 2" and applying a bead of P-201 on the overlap area. Note Detail 3.

KM 4mm String can be used to effectively waterproof the joint between a window frame and a stucco exterior (see Detail 4). For more detailed instruction see "Techniques and Comments" newsletter 228. This newsletter is produced by John Bucholtz P.E. Call 408.257.2444 or your local representative for more information.



Detail 4

KM is a versatile waterstop that is easy to install and will remain flexible even when expanded. It will serve as a long lasting positive waterstop.

PACKAGING INFORMATION SELECTED STRING SIZES.

KM 4mm (.15")	165'/case	3.0 lbs
KM 6mm (.23")	165'/case	4.0 lbs
KM 8mm (.31")	99'/case	10.1 lbs
KM 10mm (.39")	82'/case	8.8 lbs
KM 12mm (.47")	82'/case	11.0 lbs
KM 14mm (.55")	66'/case	19.8 lbs
KM 16mm (.62")	49'/case	11.0 lbs
KM 20mm (.79")	33'/case	12.1 lbs
KM 24mm (.95")	33'/case	13.2 lbs

Check with your local representative or call 800.999.3959 to check availability.

* Other sizes available by special order.

KM string has good resistance to a number of chemical contaminants. However, some chemicals in higher concentrations may affect the performance of KM. Consult your Adeka Ultra Seal Representative concerning any unusual chemical contaminants or conditions.

Technical assistance is available through the manufacturer and representatives of Adeka Ultra Seal. Contact your local representative for additional information or call (800) 999-3959.

Visit our website at:

www.adeka.com

ADEKA ULTRA SEAL

P-201

OCM, Inc.

Sales Information: (847) 955-9700
Technical Information: (800) 999-3959
www.adeka.com

PRODUCT DESCRIPTION: Single component grey paste.	
PACKAGING INFORMATION: 24 Cartridges/Case 11.2 oz	
PHYSICAL PROPERTIES:	
Hardness	A45 - (JIS K 6253)
Tensile Strength (MPa)	Not less than 4 - (JIS K 6251)
Elongation (%)	Not less than 850 % - (JIS K 6251)
Volume Exp. %	Not less than 100% In House
Specific Gravity	1.25 - (JIS K 6350)
Polymerized	YES

GENERAL DESCRIPTION

P-201is a single component hydrophilic paste used in water-stop and repair applications. It can be placed on damp or uneven surfaces and functions in a wide range of temperatures and ground water conditions.

BASIC USE

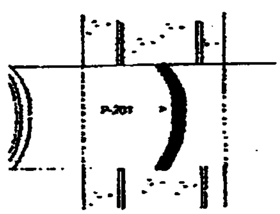
P-201 is used in piping penetrations, preventing water penetration in sheet piles, pre-cast concrete joints, and a variety of joint and crack repair applications. It is used in conjunction with formed Adeka water-stops whenever damp or rough surfaces are encountered.

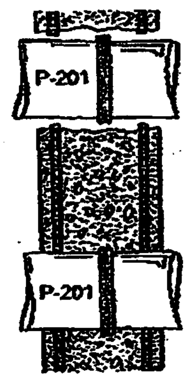
BASIC INSTALLATION

Clean dirt and debris before applying P-201. The area may be damp but must not have standing water. Bead size is controlled by cutting the tip of the cartridge at the proper place. Normal bead size is approximately 0.25 by 0.50 inches. Cut the nozzle at the first notch to obtain that bead size. One cartridge will cover approximately 12 linear feet at a bead size of 0.25 by 0.50 inches. Apply a consistent and continuous bead. Expansion occurs in three dimensions and in the direction of least resistance. Therefore P-201 must be encapsulated or injected into a crack or joint in order to function properly. It is not suitable for a surface application. Allow time for P-201 to cure before placing concrete.

INSTALLATION

PIPING PENETRATIONS

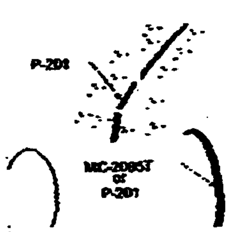




The P-201 should be placed on the pipe near the center of the wall.

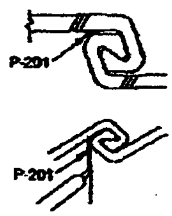
MC-2005T can be used if the pipe diameter exceeds 12 inches. Use MC-2010MN if the diameter is greater than 24 inches. Allow sufficient curing time, 24-36 hours, for the P-201. This is to avoid the possibility of the new concrete pour tearing the P-201 from the pipe.

EXISTING WALL PENETRATIONS



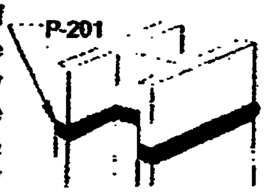
Apply a ¼" by ½" bead of P-201 to the center of the existing wall. Remove any dirt or loose debris before applying the bead. The surface does not have to be smooth or dry. Apply a consistent and continuous bead.

SHEET PILE INSTALLATION



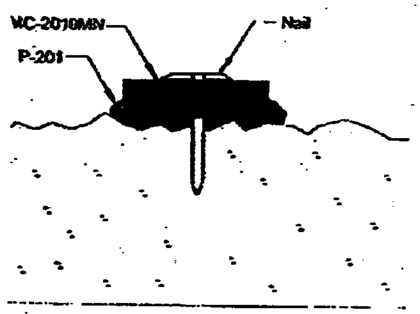
Clean area of dirt and debris. Stop flowing water and inject P-201 into the interlock area as shown. Cut the tip of the nozzle near the tip to produce a small size bead that can be injected into the lock. If the sheet pile is under a hydrostatic head, stop the flow of water with Adeka KM string before applying the P-201.

I - BEAM INSTALLATION



Clean around the area of the I-Beam before placing the P-201. Apply a bead size approximately ¼ by ½ inches. Do not allow any gaps in the bead. Overlap and consolidate the area where the beads meet.

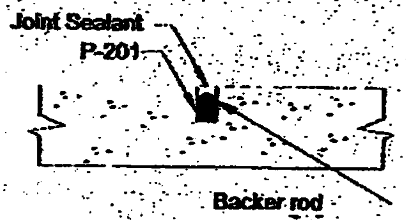
INSTALLATION WITH MC-2010MN



Apply a bead of P-201 before placing MC-2010MN on rough concrete. Apply sufficient P-201 to fill all voids or rough areas.

Use P-201 in any application where an overlap or joining occurs with any other formed water-stop.

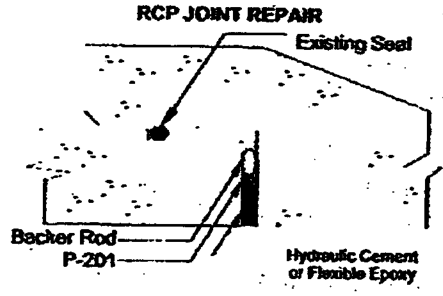
SAW CUT CONTROL JOINT

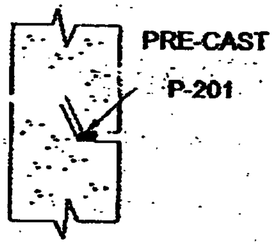


Saw cut the control joint to a depth of 1½ ~ 2 inches. Inject P-201 into the joint to a depth of ½ inches. Place backer rod on top of the P-201 as an expansion buffer. Fill the remaining joint area with grout, epoxy or hydraulic cement. There is a chance that the covering material will be lifted off due to the expansion pressure of the P-201 if the backer rod is not in place. Do not place P-201 in a position where it will be exposed to direct sunlight.

ADDITIONAL INSTALLATION EXAMPLES

RCP JOINT REPAIR





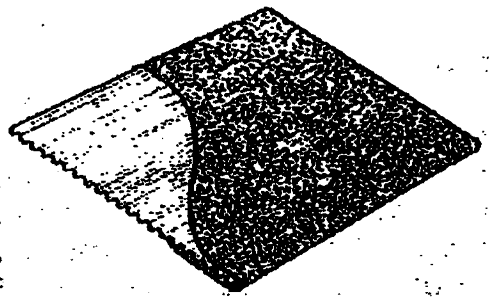
P-201 can be used in pre-cast applications such as utility vaults and storage reservoirs.

P-201 has good resistance to a number of chemical contaminants. Some chemicals in higher concentrations may affect the performance of P-201. Consult your local Adeka representative concerning any unusual chemical contaminates.

Visit www.adeka.com for warranty and more technical information or call (800) 999-3959

AMERDRAIN® 607 Wick Drain

AMERDRAIN 607 prefabricated vertical soil drain is one of the world's most widely used vertical drain designs. It is manufactured using a heavier filter fabric for those vertical drain projects requiring added fabric strength. AMERDRAIN 607 is a two-part prefabricated soil drain consisting of a formed polypropylene core covered with a spunbonded polypropylene filter fabric. The fabric allows water to pass into the drain core while restricting the movement of soil particles which might clog the core.



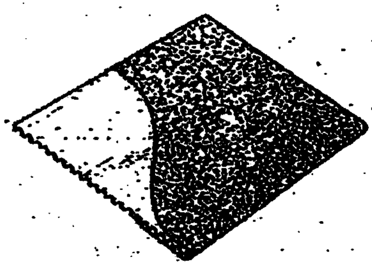
PHYSICAL PROPERTIES	TYPICAL US VALUE	TYPICAL SI VALUE	TEST METHOD
FABRIC PROPERTIES			
Material	Polypropylene	Polypropylene	
Grab Tensile Strength	250 lbs	1112 N	ASTM D-4632
Puncture Strength	80 lbs	356 N	ASTM D-4833
Trapezoidal Tear	100 lbs	645 x 355 N	ASTM D-4533
Mullen Burst Strength	240 psi	1655 kPa	ASTM D-3786
Elongation	27 x 20%	27 x 20%	ASTM D-4632
EOS (AOS)	170 sieve	90 micron	ASTM D-4751
Permeability	0.01 in/sec	0.01 cm/sec	ASTM D-4491
Flow Rate	11 gal/min/ft²	1140 L/min/m²	ASTM D-4491
CORE PROPERTIES			
Material	Polypropylene	Polypropylene	
Tensile Strength	600 lbs	2650 N	ASTM D-4632 (Mod.)
PRODUCT PROPERTIES			
Discharge Capacity	1.75 gal/min	6.6 L/min	ASTM D-4716
Roll length	500 ft	152 m	
Roll width	3.65 in	93 m	
Roll weight	62 lbs	28 kg	

All information, drawings and specifications are based on the latest product information available at the time of printing. Constant improvement and engineering progress make it necessary that we reserve the right to make changes without notice. All physical properties are typical values. Standard variations in mechanical properties of 10% and in hydraulic properties of 20% are normal.

AWD AMERICAN WICK DRAIN CORPORATION
1209 Airport Road • Monroe, NC • 28110, USA
800 242-WICK • 704 238-9200 • Fax 704 296-0690
www.americanwick.com • info@americanwick.com

AMERDRAIN® 407 Wick Drain

AMERDRAIN 407 prefabricated vertical soil drain is one of the world's most widely used vertical drain designs. It is appropriate for most ground improvement projects requiring vertical drain. AMERDRAIN 407 is a two-part prefabricated soil drain consisting of a formed polypropylene core covered with a spunbonded polypropylene filter fabric. The fabric allows water to pass into the drain core while restricting the movement of soil particles which might clog the core.



PHYSICAL PROPERTIES	TYPICAL US VALUE	TYPICAL SI VALUE	TEST METHOD
FABRIC PROPERTIES			
Material	Polypropylene	Polypropylene	
Grab Tensile Strength	130 lbs	578 N	ASTM D-4632
Puncture Strength	50 lbs	222 N	ASTM D-4833
Trapezoidal Tear	70 lbs	310 N	ASTM D-4533
Mullen Burst Strength	150 psi	1034 kPa	ASTM D-3786
Elongation	60%	60%	ASTM D-4632
EOS (AOS)	80 sieve	180 micron	ASTM D-4751
Permittivity	0.7 sec^{-1}	0.7 sec^{-1}	ASTM D-4491
Permeability	0.01 in/sec	0.03 cm/sec	ASTM D-4491
Flow Rate	80 gal/min/ft^2	3260 L/min/m^2	ASTM D-4491
CORE PROPERTIES			
Material	Polypropylene	Polypropylene	
Tensile Strength	200 lbs	885 N	ASTM D-4632 (Mod.)
PRODUCT PROPERTIES			
Discharge Capacity	1.6 gal/min	6 L/min	ASTM D-4716
Roll length	1000 ft	3.22 m	
Roll width	4 in	100 m	
Roll weight	52 lbs	23.6 kg	

All information, drawings and specifications are based on the latest product information available at the time of printing. Constant improvement and engineering progress make it necessary that we reserve the right to make changes without notice. All physical properties are typical values. Standard variations in mechanical properties of 10% and in hydraulic properties of 20% are normal.

AMERICAN WICK DRAIN CORPORATION
1209 Airport Road • Monroe, NC • 28110, USA
800 242-WICK • 704 238-9200 • Fax 704 296-0690
www.americanwick.com • info@americanwick.com

Nilex Product Specifications www.nilex.com

Mebra-Drain® MD-7407
Technical Specifications

EX

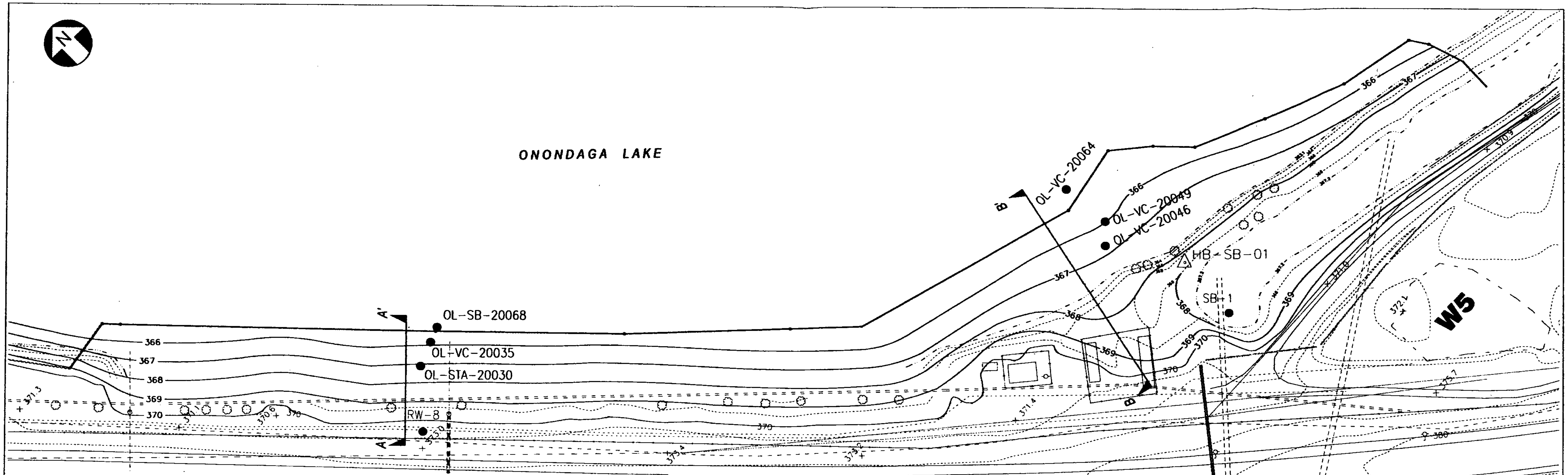
Nilex Corporation 15171 E. Fremont Drive, Centennial, CO 80112 (303) 766-2000
Nilex Inc. Edm. (780) 463-9535; Cgy. (403) 543-5454; Van. (604) 420-6433; Win. (204) 925-4466

rty	Test Method	Units	
al			
Body Material	-	-	Polypropylene
Body Color	-	-	White
laterial	-	-	Polypropylene
Color	-	-	Grey
		mm	100
		inches	4
hickness	ASTM D-5199	mm	2.4
		inches	0.0945
site Thickness	ASTM D-5199	mm	3.6
		inches	0.142
of Core	ASTM D-3776	g / m	41
		oz / ft	0.44
of Filter	ASTM D-5261	g/m^2	112
		oz/yd^2	3.3
ical Properties			
ength Core	ASTM D-638	N	800
		lbf	180
Tensile Strength Filter	ASTM D-4632	N	623
		lbf	140
Elongation Filter	ASTM D-1621	%	60
re Strength	ASTM D-4833	N	220
		lbf	49.4
oidal Tear	ASTM D-4533	N	268
		lbf	60
rge Capacity) kPa / 1.45 psi	ASTM D-4716	gal/min	2.12
		m^3/s	1.34×10^{-4}
rge Capacity kPa / 35 psi	ASTM D-4716	gal/min	1.76
		m^3/s	1.11×10^{-4}
tivity	ASTM D-4491	sec^{-1}	0.5
Burst	ASTM D-3786	psi	150
ent Opening Size	ASTM D-4751	US Sieve #	110
		mm	0.14
ard Packaging			
idth		inches	4
		mm	100
ength		ft.	984
		m	300
leight		lb	49
		kg	22

...ven represent minimum average roll values (MARV)
... information presented herein, while not guaranteed, is to the best of our knowledge true and accurate and the recipient assumes all responsibility for its use. No warranty or guarantee expressed or implied ...ing the performance of any product, as the manner of use and handling are beyond our control. Nothing contained herein, is to be construed as permission or as a recommendation to infringe any patent.

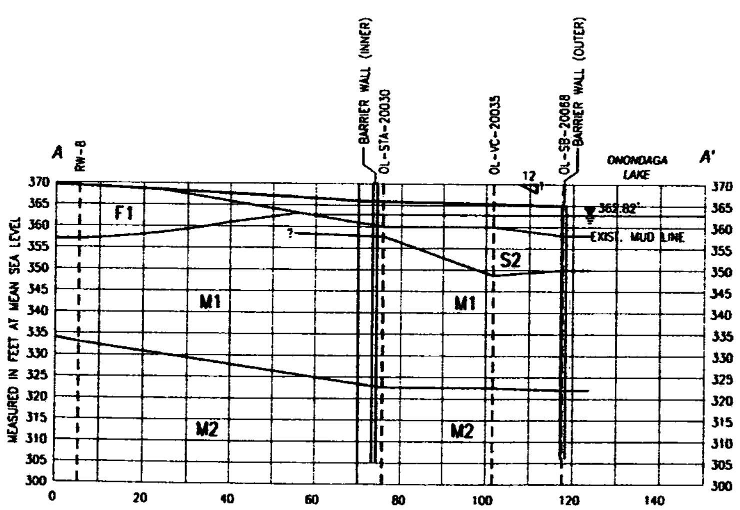
Section P

Grading Plan



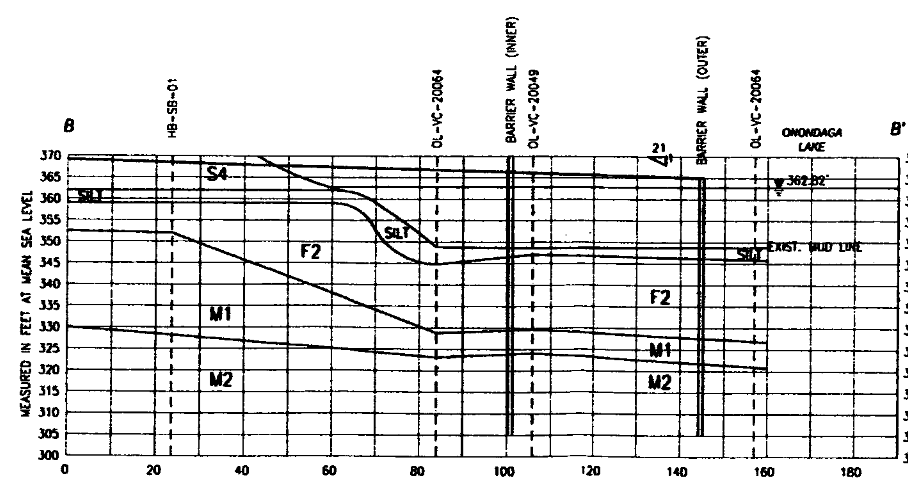
BARRIER WALL CONTOUR PLAN

SCALE: 1" = 50'-0"



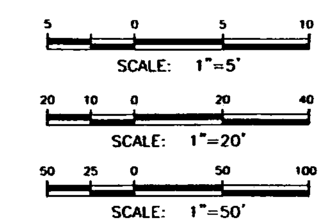
SECTION A-A'

HORRIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 5'-0"



SECTION B-B'

HORRIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 5'-0"



NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE
A	ISSUED FOR REVIEW	CLW	MBB				

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE

EQUIPMENT P.O. B/M NUMBERS:

JOB NO. 443850
CONTRACTOR'S JOB
AS SHOWN

PARSONS

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

PROPOSED FINAL GRADING PLAN AND SECTIONS

Honeywell

DRAWN	DATE	CHK.	DATE
JHG	2/15/08	MBB	X/X/07

443850sk001 — REV A

FILE NAME: P:\HONEYWELL -SYR\443850 - WILLIS BARRIER WALL\10 TECHNICAL CATEGORIES\10.3 CAD\443850SK001.DWG
PLOT DATE: 2/15/2008 11:53 AM PLOTTED BY: GOLDTHWAIT, JAMES

APPENDIX B

PEAK ENVIRONMENTAL REMEDIAL ACTION WORK PLAN

WORK PLAN

Willis Avenue / Semet Tar Beds Sites
Interim Remedial Measure (IRM)
Willis Barrier Wall

Prepared for:

Parsons
320 Elwood Davis Road
Suite 312
Liverpool, NY 13088

Submitted by:

Peak Environmental, LLC
23 Lake Street
Owego, NY 13827

July 2, 2008

TABLE OF CONTENTS

1. Introduction

Peak Environmental, LLC (Peak) is pleased to submit this Work Plan for the Honeywell Willis Ave Semet Tar Beds Interim Remedial Measure (IRM). Peak is proposing to construct a water-tight barrier wall designed to encapsulate contaminates and to minimize groundwater infiltration from nearby sites into Onondaga Lake at the Willis Avenue/Semet Tar Beds Site in Syracuse, New York.

Peak is aware that project scheduling is a primary consideration. Peak is fully prepared to initiate pre-construction activities immediately upon contract award – plans will be developed and required materials procured. Field work will begin as soon as plans have been approved and work materials are available.

1.1 Project Understanding

Peak's understanding of the Willis Avenue / Semet Tar Beds Sites IRM is based on our participation in the project design review process and on our review of Parson's Request for Proposal (RFP) Number 440850.30002.00 dated February 8, 2008.

Peak will be responsible for extending the Semet Avenue Barrier Wall which will further minimize groundwater infiltration from nearby sites into Onondaga Lake. The purpose of this Scope of Work is to install a water tight barrier up-gradient of the lake shore to prevent groundwater from entering the lake. Concurrent with construction of the barrier wall, Peak will place light weight fill behind the barrier wall to reconstruct the lake shore.

Additional items required to complete this scope of work include:

- Submittal of required project plans and submittals;
- Construction and maintenance of temporary facilities, including decon pads, erosion control and soil storage areas;
- Demolition and removal of intake pipes and miscellaneous debris in inland fill area;
- Installation of geotextile under inland fill;
- Management and pre-treatment of construction water.

1.2 Purpose

The purpose of this Work Plan is to describe means and methods for completing all tasks required during remedial activities at the Willis Avenue/Semet Tar Beds Sites IRM. This Work Plan describes the procedures and equipment that Peak will use to accomplish required work tasks.

Variations to procedures described in this Work Plan may need to be implemented based on varying site conditions. However, all work will be completed in accordance with the contract specifications.

2. Project Staffing / Resumes

Peak is proposing to assign the key personnel identified in Figure 4-1 to the Willis Avenue / Semet Tar Beds IRM project. In general, Peak anticipates Staffing this project with personnel experienced from the Semet Avenue Barrier Wall Installation. Personnel qualifications are summarized in the paragraphs that follow.

2.1 Project Manager

The Project Manager for this project is Mark O'Rourke. Mr. O'Rourke is President of Peak Environmental, LLC and is responsible for providing upper level management support for the project. He is responsible for assuring the project is properly staffed and equipped.

2.2 Project Superintendent

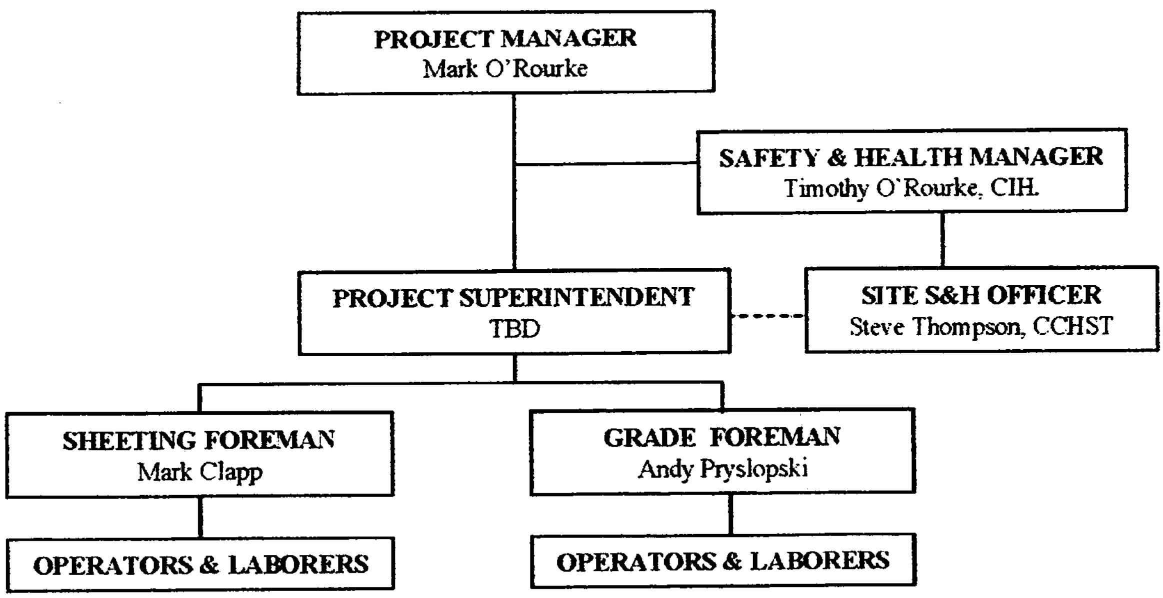
The Project Superintendent for this project is to be determined. The Project Superintendent oversees daily activities of the project and is responsible for assuring compliance with the contract specifications, implementing health and safety requirements and following safety procedures in the field. The Project Superintendent will be the primary on-site interface with Parsons/Honeywell personnel.

2.3 Safety and Health Manager

The Safety and Health Manager for this project is Timothy O'Rourke, CIH. Mr. O'Rourke will be responsible for the development, implementation and enforcement of the Site-Specific Health and Safety Plan. Mr. O'Rourke is Vice President of Peak Environmental, LLC and is a Certified Industrial Hygienist with extensive experience in developing and implementing safety programs, exposure assessment and air monitoring programs, personal protective equipment and respiratory protection programs at numerous hazardous waste sites. Mr. O'Rourke served as Health and Safety Manager during both the Willis Ave / Semet Tar Beds IRM, Semet Avenue Barrier Wall and I690 Drain Improvement projects.

Mr. O'Rourke will determine the effectiveness of the Site-Specific Health and Safety Plan through consultation with the Site Safety and Health Officer, review of air monitoring data and reports, and routine site inspections.

FIGURE 4-1 - PROPOSED PROJECT ORGANIZATION CHART



2.4 Site Safety and Health Officer

The Site Safety and Health Officer for this project is Steve Thompson, CCHST. The Site Safety and Health Officer will be responsible for the implementation and enforcement of the Site-Specific Health and Safety Plan. The Site Safety and Health Officer will have the authority to stop work any time unsafe work conditions are determined. The Site Safety and Health Officer will be responsible for day-to-day implementation of the Site Specific Health and Safety Plan.

Mr. Thompson served as Health and Safety Officer during both the I690 Drain Improvement project.

2.5 Sheeting Foreman

The Sheeting Forman for this project is Mr. Mark Clapp. The Sheeting Foreman will oversee all sheeting operations. Mr. Clapp served as Sheeting Forman during both the Willis Ave / Semet Tar Beds IRM, Semet Avenue Barrier Wall and I690 Drain Improvement projects.

2.6 Grade Forman

The Grade Foreman for this project is Mr. Andy Pryslopski. The Grade Foreman will oversee placement of inland fill. Mr. Pryslopski served as Grade Forman during both the Willis Ave/Semet Tar Beds IRM, Semet Avenue Barrier Wall and I-690 Drain Improvement projects.

3. General Design Elements

Peak's preliminary Work Plan is provided in the subsections that follow. This plan has been prepared to: (1) demonstrate our understanding of the project and (2) present our proposed approach to executing the work.

3.1 Submittals

The following items will be prepared and submitted for approval before work begins. Pre-construction submittals include:

- Work Plan,
- Contingency Plan,
- Quality Assurance / Quality Control Plan (QAP), and
- Site Specific Health and Safety Plan (HASP).

Pre-construction submittals will be submitted in accordance with Specification Section 01620 within 10 days of award. No work governed by a required submittal will be done without approval of the corresponding submittal. Five copies of each submittal will be provided.

On-going project submittals will be provided as required.

3.2 Health and Safety

Peak will develop and implement a Site Specific Health and Safety Plan in accordance with 29 CFR 1965(4) and the Honeywell Syracuse Portfolio Health and Safety Program (HSP^2). This program will be developed and implemented by our Vice President for Corporate Health and Safety, Timothy O'Rourke. A principal of Peak, Mr. O'Rourke is a Certified Industrial Hygienist with over 20 years of experience. He has developed health and safety plans and programs for numerous hazardous waste sites.

Peak plans to staff this project with a full time Site Safety Officer (SSO), Steve Thompson. Mr. Thompson is a Certified Construct Health and Safety Technician and over 10 years of environmental and safety experience. As SSO, Mr. Thompson's sole responsibility will be to implement Peak's health and safety program.

All site personnel will have current hazardous waste operations training. In addition, all site personnel will receive site specific, pre-work training and will participate in daily safety briefings. All site personnel also will be enrolled in a medical surveillance program meeting requirements of the Specification and 29CFR 1926.65(f).

Peak will implement an employee air monitoring program. This program will be developed in accordance with the Specifications and sound industrial hygiene principals. The Air Monitoring Program will be detailed in our site-specific HASP.

Peak's HASP will include a detailed Emergency Contingency and Response Plan that identify potential emergency situations; provides appropriate response actions; and lists emergency and first aid equipment to be utilized at the site. Peak will coordinate response efforts with local emergency response and medical personnel. All site incidents will be thoroughly investigated by site management and our Vice President for Corporate Health and Safety and reported to Honeywell/Parsons.

3.3 Site Security

The SSO will be responsible for site security during working hours. All on-site personnel and visitors will be required to sign-in and sign-out before entering or leaving the site. Peak will maintain records of all site access and security incidents. Visitors will be required to read and conform to the site HASP prior to accessing controlled work areas. Vehicular traffic will be permitted in designated parking areas within the Support Zone, but access to the Exclusion and Contaminate Reduction Zones will be restricted to authorized vehicles and personnel only. Use of on-site parking areas will be restricted to vehicles of the owner, engineer, contractor, and subcontractors; service vehicles related to the work; and authorized visitors.

Site security will be maintained by repairing and utilizing existing site fencing to the west of the site. The existing Route 690 fence will be utilized to the south and Onondaga Lake to the north.

Due to the difficult nature of the site, primary site security will be provided through sound work practices. During off hours, portable equipment will be secured in an on-site storage trailer. Excavations will be protected using security fences and by staging equipment to minimize access. The site will be posted with signage indicating the area as a restricted work area.

3.4 Permits

No external permits are required for this Scope of Work. Safe work, hot work, and confined space permits will be issued internally when required. The zones include the exclusion zone, the contaminate reduction zone, and the support zone. The exclusion and contaminate reduction zones will be designated using temporary construction fence. Access to these zones will be limited to authorized individuals. The SSO will be responsible for establishing and controlling site work zone during construction.

3.5 Site Work Zones

A three-zone approach will be used during hazardous site operations in order to contain the potential spread of contamination and control the flow of personnel and vehicles.

Site work zones and locations of decontamination facilities constructed in accordance with the Site Access Plan-Figure 1 of the RFP.

3.6 Mobilization

Peak will mobilize equipment, personnel, materials and supplies necessary to perform the proposed Scope of Work. Equipment will be mobilized as needed.

Peak anticipates mobilization of:

- Temporary Site Facilities,
- Cranes,
- Vibro Piling Equipment,
- Excavator,
- Loader,
- Dozer,
- Frac Tanks and Water Treatment Equipment,
- Dewatering Equipment,
- Air Monitoring Equipment,
- Safety and Personal Protective Equipment, and
- Miscellaneous Hand Tools and Portable Equipment.

3.7 Temporary Facilities/Site Preparation

The locations of temporary site facilities will be selected in coordination with Parsons. The following bulletized list provides a sequential listing of activities and deliveries anticipated as part of Peak's Site Preparation / Mobilization activities:

- Utility clearance,
- Portable toilets,
- Temporary electric, phone and internet access,
- Employee parking,
- Equipment and material storage trailer,
- Equipment decontamination facility,
- Mobilization of all equipment and materials associated with work to be performed,
- Installation of all necessary erosion and sedimentation control measures, and
- Construct lay down area for sheeting.

3.8 Soil and Erosion Control

Silt fence will be constructed around all stockpile areas and areas of drainage to the lake. Mirafi Envirofence, or equal, will be used. Any obvious areas of drainage into the lake will be diverted and/or reinforced with straw bales. Oil adsorbent booms/socks will be kept on-site and installed to contain land based oil sheens as necessary.

All excavated materials will be stockpiled and covered inside temporary perimeter dikes to prevent run-on/run-off.

Soil and erosion control measures will be maintained during the course of this project. Silt fencing will be inspected after every run-off producing event, or weekly at a minimum. Any needed repairs will be made immediately to maintain integrity of the silt fence.

All outboard construction activities will be encompassed by a silt curtain and oil absorbent boom ring.

3.9 Traffic Routes

Traffic management will be a primary challenge on this project. Peak envisions bringing loaded vehicles into the site on the temporary road running along the south of the site and to the south of the causeway. After structural upgrades to the causeway are completed, unloaded vehicles will exit the site utilizing the causeway and the temporary road running along the north of the site. Lightweight fill will be delivered from the west end of the causeway for design Sections 1 and 2 and from the east end of the causeway for design Sections 3 and 4. Flagmen will be employed as required.

Haul trucks transporting soil to Willis Avenue will follow the following route:

- Exit site and proceed south southwest on I-690 off ramp,
- Turn left onto State Fair Boulevard,
- Turn right onto Willis Avenue,
- Turn right onto Groundwater Treatment Plant entrance,
- Go around Groundwater Treatment Plant to the left, in between the Groundwater Treatment Plant and the railroad tracks,
- Enter Willis Avenue site through existing gate, Proceed along existing site roads to the Soil Storage Area.

3.10 Site Restoration

Once remedial operations are complete, Peak will begin to disassemble the Exclusion and Contaminate Reduction Zones including the water treatment system and decontamination facilities. Restoration of designated areas will be accomplished as required by the Plans and Specifications.

3.11 Demobilization and Contract Close-Out

Following completion of all work, all temporary site facilities described above will be removed. Contract close-out will be conducted in accordance with the Specifications as outlined below.

Project Record Documents. All specified project documentation will be maintained at the site in a separate file. This documentation will remain at the site in Peak's trailer from mobilization through demobilization and will, at a minimum, include one copy of drawings, Specifications, addenda, reviewed shop drawings, change orders, other modifications to the contract, current versions of approved project plans, field test records, all pertinent correspondence, and drawings reflecting "as-built" conditions. The as-built marked prints showing work in progress will always be available for inspection. As work is completed in each area, the marked drawings will be submitted for approval. Final as-built drawings will be generated and filed on-site. Any samples and test results will be maintained in a similar manner. At project conclusion, these documents will be gathered with a cover letter of explanation and delivered to the Engineer. This will be done prior to issuance of the final acceptance certificate allowing final payment.

Punch List and Final Inspection. At the final construction conference, Peak will request the final inspection. The Engineer then will prepare a "punch list" of activities or items that need to be addressed for project close-out. Peak will promptly initiate work to complete all items on the punch list. When this work has been completed to the Engineer's satisfaction, the certificate of substantial completion will be issued.

Final site clean-up procedures and demobilization then will be accomplished by Peak. Final inspection will be performed by the Engineer final clean-up and demobilization. If satisfied, the Engineer will issue the final acceptance certificate.

4. Sheet Pile Installation

4.1 Sheeting

Peak will install steel sheet piles with corrosion protection/epoxy coating and sealed interlocks as specified on the drawings. All sheets will interlock with the adjacent sheet pile, and interlocks will be fully sealed to form a continuous low-permeable hydraulic barrier. ARBED Sheeting with DeNeef Swellseal will be used.

Prior to sheeting activities, a silt curtain and oil absorbent booms will be installed in the lake to isolate sediment turbidity caused by sheet pile installation activities.

Peak will install sheeting a minimum of three feet, or into the silt and clay layer in accordance with Contract Drawings C007 –C012 – Barrier Wall Cross Section.

AZ 19-700 Sheet piles, conforming to ASTM A572/A 572M, Grade 50 will be used. The interlock of sheet piling will be free-sliding, allow a swing angle of at least 5 degrees when threaded, and maintain continuous interlocking when installed. Steel sheet piling will be of full-length sections and dimensions shown on the drawings. The bottom of each clear interlock will be plugged to prevent soil entry during driving. Both sides of the steel sheet pile will be coated with Carboline 300M corrosion protection to the elevations indicated on the contract drawings. Peak will perform touch-up in accordance with the coating manufacturer's recommendations, as necessary.

Swell Seal Hydrophilic Polyurethane Waterstop manufactured by DeNeef Construction Chemicals will be used as interlock sealant. Sealant will be installed in accordance with the contract plans and specifications.

Peak will maintain a Pile Driving Record for each sheet pile. Content of the Pile Driving Record will be in accordance with Specification 02457. Any unusual sheet pile driving problems during driving will be documented. Records documenting interlock sealing will be provided in accordance with the Specifications.

Peak will locate the pile driving template and drive the sheet pile to design elevations using standard construction survey equipment.

4.2 Installation Equipment

Sheet piles will be installed utilizing a 120-ton crane and an Ice 416 vibratory sheetpile driver. A template consisting of an eighty foot long steel H beam with a wooden timber bumper system will be carried on two flexifloats placed end to end for aligning, supporting, and maintaining sheet piling in the correct position during setting and driving. Once survey control of line and grade has been established, the flexifloat work platform will be spudded in place during driving activities. This work platform will also support a manlift should one be used.

4.3 Cathodic Protection System

Cathodic protection will be installed on the barrier wall after installation. 150 pound zinc anodes conforming to Federal Specification MIL-A-18001H will be installed on each side of the barrier wall at 30 feet intervals in a staggered configuration. Anodes will be installed to angle iron in accordance with manufacturer's instructions. Anodes will be installed inside of a half pipe or square tube to protect and cover the unit.

5. Placement of Inland Fill

Lightweight fill will be placed behind the barrier wall to create new land. Placement of fill will be staged as to provide a work platform for driving. Fill placement sequence will be according to the fill placement scheme provided. The pile driving crane will generally be moved to the west during initial fill placement to provide more room for site truck access. Fill will be placed over geotextile as described in the following sections.

5.1 Reinforcing Geotextile

Reinforcing geotextile will be placed over existing mudline prior to placing fill. Mirafi HP-350 geotextile will be used. Geotextile will be stitched into panels of a width to be determined in consultation with the engineer and in lengths varying from approximately 55 feet to 135 feet depending on distance from shore to barrier wall. Panels will be stitched on-site by a specialty subcontractor experienced in geotextile installation. All panels will be installed in one piece sections from shore to barrier wall. Joints between panels running perpendicular to shore will be overlapped with a minimum 5-foot overlap.

Geotextile will be deployed from shore or work platform using work boats. Floats will be used to indicate the edges of the each panel. Panels will be secured along shore and then either spiked in place with metal rods or submerged using light weight fill. Geotextile will be held tight as it is submerged.

5.2 Fill Placement / Work Platform

Light weight fill will be placed behind the barrier utilizing low pressure dozers. Soundings will be conducted 15 feet in advance of the toe of slope to monitor for mud waves. If a mud wave is detected, fill will be placed beyond mud wave and worked back toward the toe of slope. Rolls of geo-grid reinforcing fabric will be stored on site and installed in the event that a mud wave occurs.

Lightweight fill will be advanced along the barrier wall to allow for stable work platform. Work platform will be constructed in accordance with Note 5 of contract drawing C022.

Lightweight fill will be placed to an elevation of +365.5. In design Section 3, fill will be densified utilizing a vibratory hammer and H pile where fill extends below elevation of 357.

Densification will be performed by driving H-pile through fill to depth approximately 2 feet above geotextile. Probe will be held in place for 90 seconds while operating the vibratory hammer. Probing will be performed at 5-foot intervals over the entire fill surface.

Truck traffic will be restricted within 15 feet of sheet pile wall outboard of the causeway and within 25 feet of the barrier wall east of the causeway.

6. Intake Pipe Plugging and Removal

Peak anticipates plugging and removing the existing intake pipes as follows:

1. A containment cell will be constructed around work area to control disturbed sediments.
2. Sediments above the pipes will be removed using conventional excavation equipment.
3. Utilizing divers, a hole will be cut in the top of each intake pipe. Divers will install grout bag plugs in both inboard and outboard of the where pipe will be broken.
4. Depending on steel thickness, the intake pipes will be either torch cut or broken using hammer and spud.
5. Debris will be removed or displaced utilizing divers and / or excavation equipment. Debris will be removed from the containment cell utilizing a clam shell bucket.
6. Saturated sediments will be allowed to decant in the temporary soil and debris decant area. Further stabilization utilizing a stabilization agent may be required.
7. Sediments will be characterized for TAL, TCL and TCLP compounds prior to any hauling. If testing shows material to be non-hazardous then it will be hauled and placed in the Willis Avenue stockpile. Tests showing hazardous levels in the sediment will result in the material being hauled and disposed of in an approved facility.
8. De-watered sediments will be transported to Willis Avenue stockpile area utilizing Part 364 permitted dump trucks, as described in Section 3.10. Quantities of material transported to Willis Avenue will be documented daily using Bill of Lading
9. The intake pipes will be filled with flowable fill inboard of the grout plugs. Water from within the intake pipe will be pumped to the on-site water management system as it is displaced by the flowable fill.

7. Willis Avenue Soil Storage Area

A soil storage area will be constructed at the Willis Avenue site, at a location designated by Honeywell with concurrence from NYSDEC. The storage area will be large enough to accommodate all materials excavated from the project. The soil storage area will be lined with 40-mil HPDE geomembrane and sloped to contain any surface water that may accumulate. Liner edges will be buried in a 1-foot-deep anchor trench. A 10-mil reinforced geomembrane will be used to cover the Soil Storage Area. The geomembrane cover will be placed and secured over the Soil Storage Area prior to any precipitation and at the end of each work day. The cover will be large enough to cover the entire storage area. The final closure for the stockpile will consist of a one foot vegetated cover layer.

7.1 Soil Transport

Soil will be transported to the Willis Avenue storage facility by use of Part 364 Permitted dump trucks. Quantities of material transported to Willis Avenue will be documented daily using Bill of Lading.

If necessary, Peak will stabilize soil for water content prior to shipping to the Willis Avenue Storage Facility.

8. Survey Layout and Control Methods

Multiple control points will be identified and surveyed during mobilization. These points will be utilized for turning point location, template placement, and elevation control. A Total Station GTS 212 will be utilized for all coordinate location.

9. Construction Water Management

Construction water will be generated during plugging and removal of the intake pipe. Water within the pipe will be pumped and collected as flowable fill is added.

9.1 Water System Design

The location of the on-site water treatment system will be determined in consultation with the Engineer.

Peak proposes to pump water from the excavation through a weir tank, then a 30 micron bag filter and then discharge directly to the existing point of connection (POC). The discharge flow to the on-site discharge point (TS-2) will not exceed 350,000 gallons per week with a peak flow rate of 150 gpm average per day. However, Peak will have four 20,000 gallon frac tanks on-site in case dewatering volumes cannot be met by direct pump and treat methods.

Peak will coordinate pumping activities with the Willis Avenue Groundwater Treatment Operators.

APPENDIX C

SWPPP ADDENDUM FOR 2008 CONSTRUCTION ACTIVITIES

PARSONS

290 Elwood Davis Road, Suite 312 • Liverpool, New York 13088 • (315) 451-9560 • Fax (315) 451-9570 • www.parsons.com

April 29, 2008

Ms. Ellen Hahn
New York State Department of Environmental Conservation
615 Erie Blvd. West
Syracuse, New York 13204-2400

SUBJECT: Willis Ave./Semet Tar Beds Sites Interim Remedial Measure (IRM)

Dear Ms. Hahn:

This information package has been prepared as an addendum to the Stormwater Pollution Prevention Plan (SWPPP) for the Willis Ave./Semet Tar Beds Sites Groundwater Treatment Plant (O'Brien & Gere, 2005). Materials presented as part of this addendum have been prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharge from Construction Activities, Permit No. GP-02-01. The addendum will be inserted into the SWPPP and maintained onsite for the duration of construction.

Construction activities for the IRM will be conducted in accordance with the SWPPP. The drawings within this addendum include information on the location, details, and descriptions of sediment control facilities to be installed in accordance with the following:

- NYSDEC *State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities* (Permit No. GP-02-01 dtd. January 8, 2003).

- NYSDEC *Standards and Specifications for Erosion and Sediment Control* (2005).

Please note that, as presented in the attached drawings, erosion and sediment control facilities are to be installed and maintained at the construction site and in the proposed material staging locations for the duration of the project until those areas are stabilized in accordance with Permit No. GP-02-01.

If you have any questions, or require additional information, please contact me, or Matt Warren, at (315) 451-9560.

Sincerely,

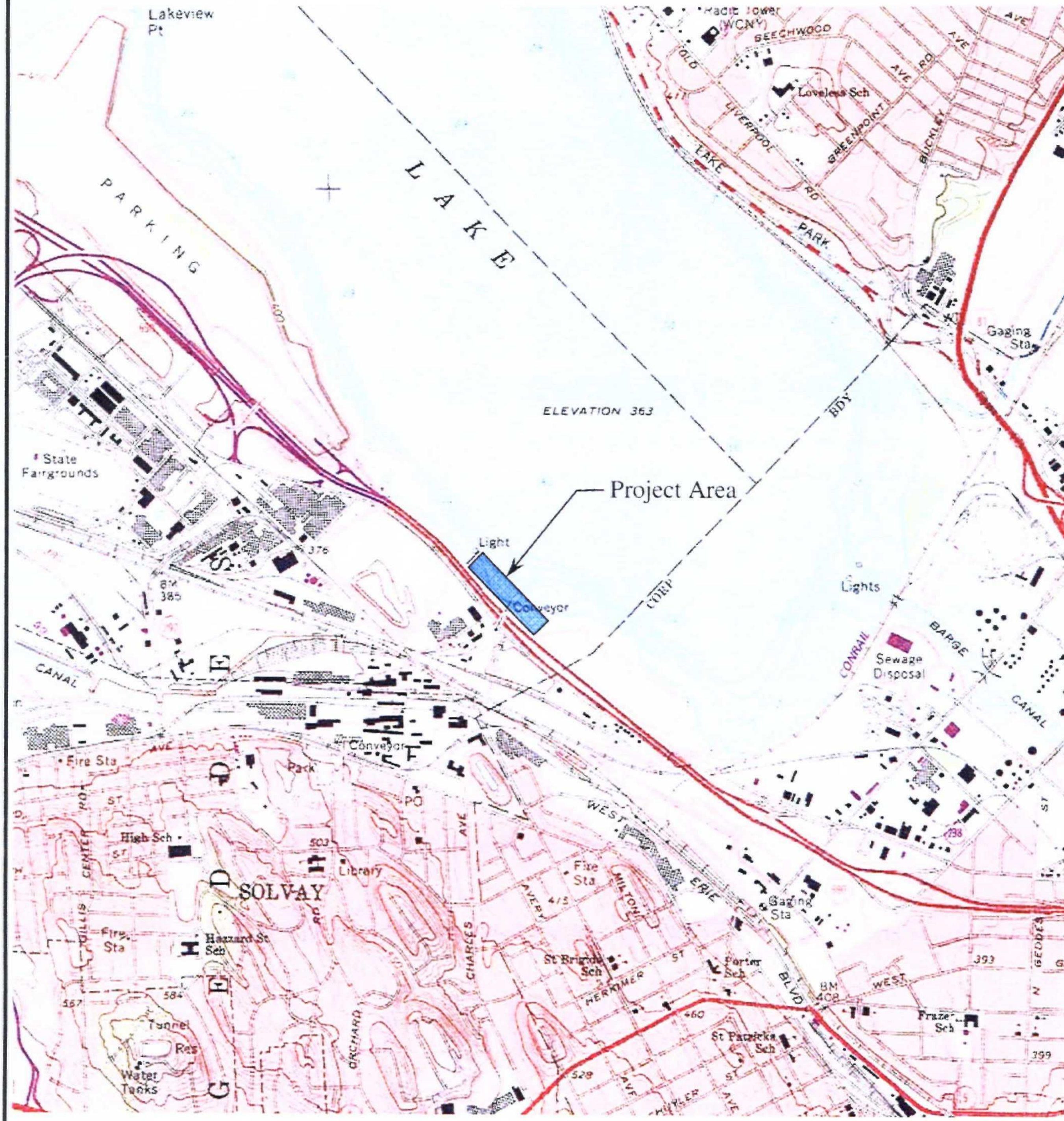
PARSONS

Michael B. Broschart
Project Manager

<mbb>

<Attachment >

cc:	Mr. Al Labuz	Honeywell
	Mr. Richard Mustico	NYSDEC
	Mr. Steve Warren	Parsons
	Mr. John Lanier	Parsons
	Mr. Dave Steele	Parsons
	Mr. Matt Warren	Parsons
	Project File 44287	



New York Quadrangle

LATITUDE: N 43° 4.05' 0"

LONGITUDE: W 76° 11.89' 0"

SCALE: 1" = 2000'

N

SOURCE: U.S.G.S. SYRACUSE WEST QUADRANGLE

FIGURE 1

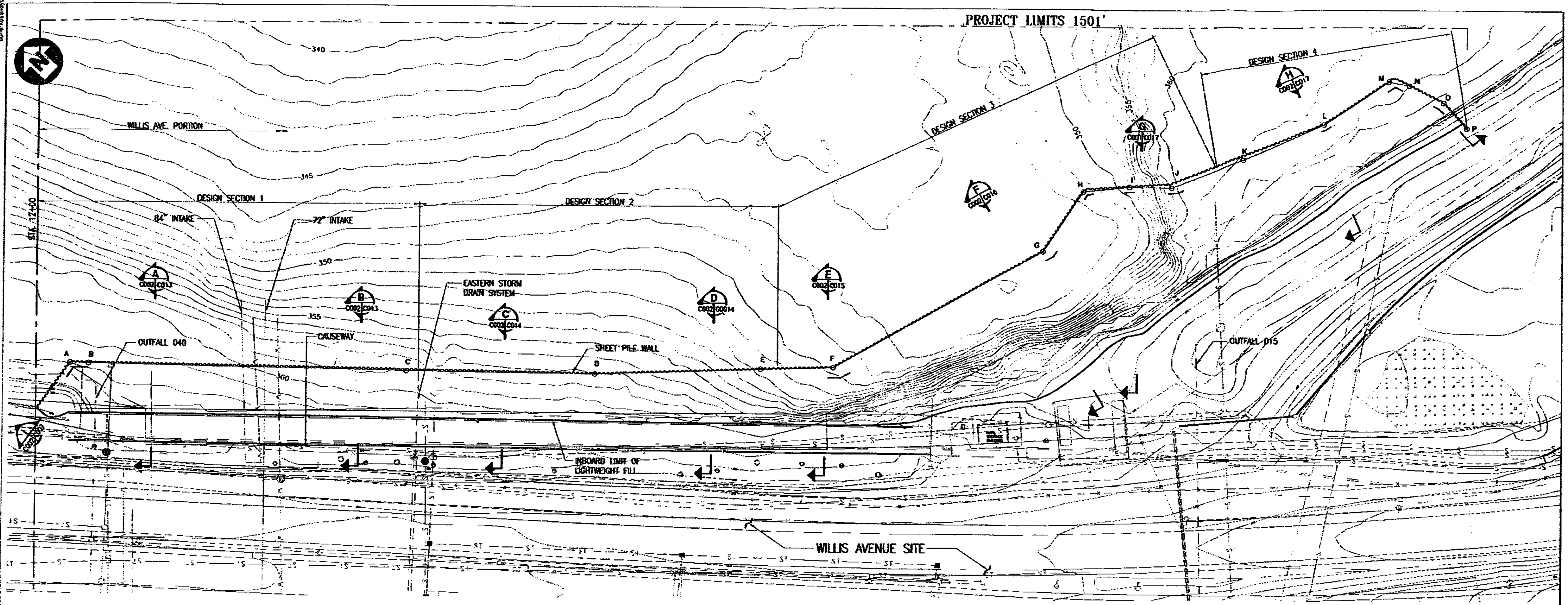
Honeywell Willis/Semet IRM
Syracuse, New York

SITE LOCATION MAP

PARSONS

290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, NY 13088 PHONE: (315) 451-9560

P:\Honeywell -SYR\443850 - Willis Barrier Wall\10 Technical Categories\10.2 Graphics\Sitemap.ppt



PLAN

SCALE: 1"=50'

COORDINATE POINTS		
LABEL	NORTH	EAST
A	1118639.84	922413.47
B	1118625.71	922428.18
C	1118378.07	922654.64
D	1118233.24	922790.02
E	1118111.10	922914.82
F	1118057.30	922969.30
G	1117985.30	923211.0
H	1117999.20	923286.50
I	1117968.50	923322.80
J	1117936.04	923352.75
K	1117902.85	923425.95
L	1117868.23	923510.67
M	1117850.92	923591.26
N	1117832.55	923602.76
O	1117794.13	923614.32
P	1117757.82	923611.67

NOTES:

1. THE POINTS LABELED A THROUGH P REPRESENT THE MINIMUM REQUIRED THEORETICAL OUTSHORE LIMIT OF HYDRAULIC BARRIER.

DRAWING IS HALF-SIZE IF PLOTTED 11x17

HONEYWELL – RESTRICTED
PRINTS OF THIS DRAWING MAY NOT BE RELEASED WITHOUT PRIOR APPROVAL

PARSONS
290 ELWOOD DAVIS ROAD, SUITE 312, LIVERPOOL, N.Y. 13088, PHONE: 315-451-9560

MUESER RUTLEDGE CONSULTING ENGINEERS
14 PENN PLAZA – 225 WEST 34th STREET
MRCE FILE NO. 9804

NOTICE
THIS DRAWING, THE PROPERTY OF HONEYWELL IS FURNISHED SUBJECT TO RETURN ON DEMAND AND THE CONDITION THAT THE INFORMATION AND TECHNOLOGY EMBODIED HEREIN SHALL NOT BE DISCLOSED OR USED AND THE DRAWING SHALL NOT BE REPRODUCED OR COPIED IN WHOLE OR IN PART EXCEPT AS PREVIOUSLY AUTHORIZED IN WRITING. ANY PERSON WHO MAY RECEIVE OR OBSERVE THIS DESIGN WILL BE HELD STRICTLY LIABLE FOR ANY VIOLATION WHETHER WILLFUL OR NEGLIGENT.

NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	NO.	REVISION	BY	APPR.	APPR.	APPR.	APPR.	DATE	REFERENCE	DWG. NO.	APPROVALS	DATE
–	–	–	–				–												

EQUIPMENT P.O. B/M NUMBERS:

JOB NO.
CONTRACTOR'S JOB NO.
SCALE: 1"=50'-0"

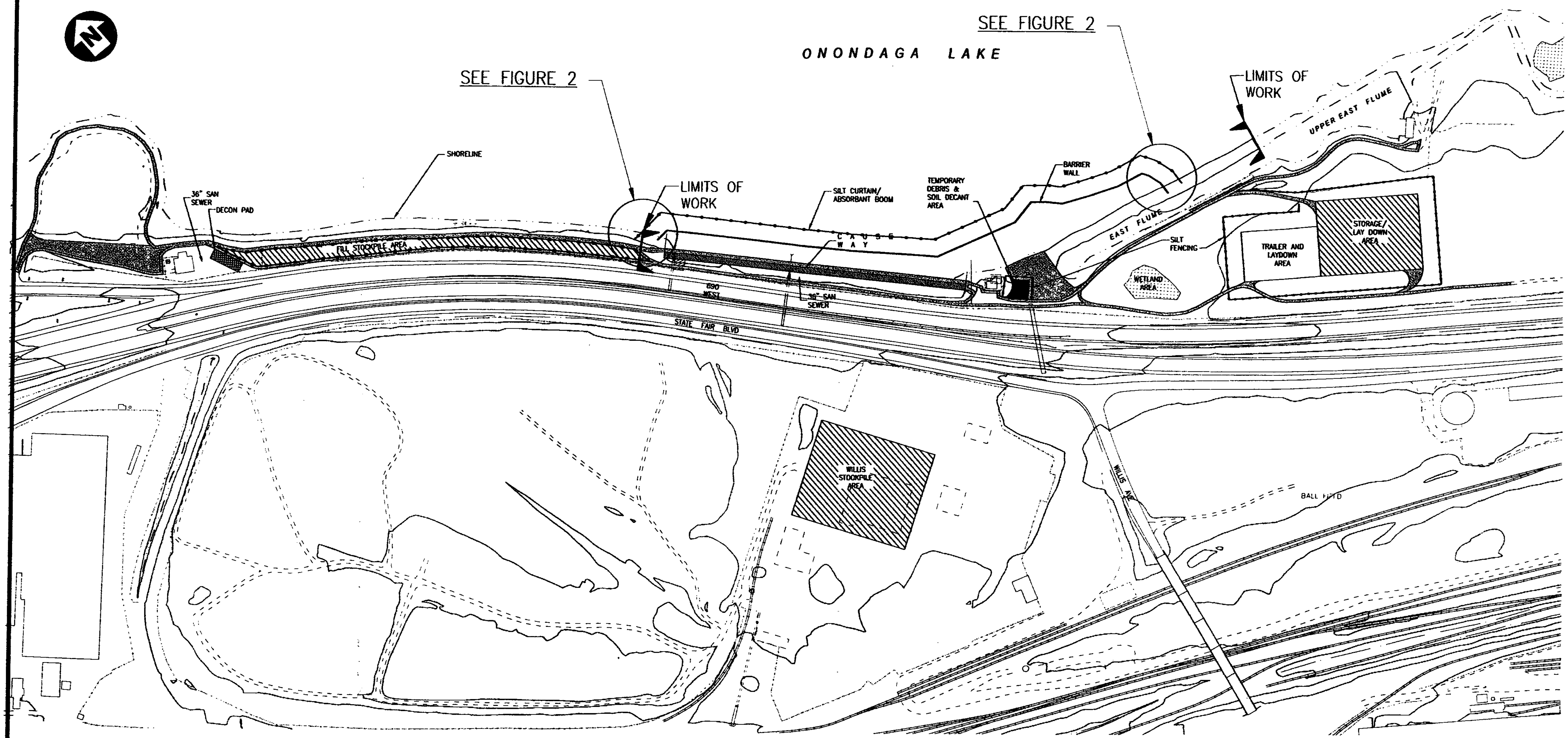
WILLIS AVE./SEMET TAR BEDS SITES IRM
SYRACUSE, NEW YORK
SHEET PILE WALL
GENERAL PLAN

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

DRAWN	DATE	CHK.	DATE
JCM/RJL	02-08-08	TJL	02-08-08

LOCATION
C002
REV

Feb 08, 2008 at 3:38pm
C:\DWGS\98\9801\NEW CONTRACT-OPT1\C002.dwg



LEGEND:

- FENCE
- RAILROAD
- ELEVATION CONTOUR
- DIRT/GRAVEL ACCESS ROADS
- SILT CURTAIN/ABSROBANT BOOM
- SILT FENCE

SITE CONDITION NOTES:

1. CLIENT WILL PROVIDE CONTRACTOR WITH AN OFFICE AND BREAK TRAILER WITH POWER.
2. CONTRACTOR WILL PROVIDE PORTABLE SANITATION FACILITIES.
3. CONTRACTOR WILL PROVIDE ACCESS THROUGH THE WORK AREA FOR AUTHORIZED THIRD PARTIES. CONTRACTOR WILL IMPLEMENT ROAD CONES AND SIGNAGE TO MANAGE TRAFFIC.
4. CONTRACTOR WILL PROTECT THE ONONDAGA COUNTY 36", 12" AND 24" SEWER LINES WITHIN THE EXTENTS OF THE PROJECT WORK AREA.
5. CONTRACTOR WILL MAINTAIN AND SUPPRESS VISIBLE DUST ON SITE ACCESS ROADS. IN ADDITION, CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE CONDITION AND CLEANLINESS TO THE ROUTE 690 OFF RAMP ENTRANCE.
6. CONTRACTOR SHALL PRACTICE PROPER HOUSEKEEPING AND STOCKPILE MANAGEMENT.
7. CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATION WITH OCWA TO OBTAIN SITE WATER SOURCE.
8. CONTRACTOR SHALL PROVIDE SAFETY FENCING TO ISOLATE AND PREVENT ACCESS TO SPECIFIC WORK ZONES.
9. CONTRACTOR IS RESPONSIBLE FOR ITS OWN SITE SECURITY INCLUDING LOCKING AND SECURING EQUIPMENT AND MATERIALS.
10. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ACCESS TO ONONDAGA LAKE. OWNER WILL NOT PROVIDE A DOCKING AREA
11. CONTRACTOR SHOULD BE AWARE THAT THE SITE CONTAINS EXISTING BURIED UTILITIES, EXPOSED UTILITIES AND MANHOLES. CONTRACTOR WILL PROTECT ALL EXISTING UTILITIES.

FILE NAME: P:\HONEYWELL -SYR\444287 WILLIS AVENUE WALL\10.0 TECH\10.0 CAD\SK444287-C-001.DWG
PLOT DATE: 4/29/2008 4:12 PM PLOTTED BY: HALL, STEVE E

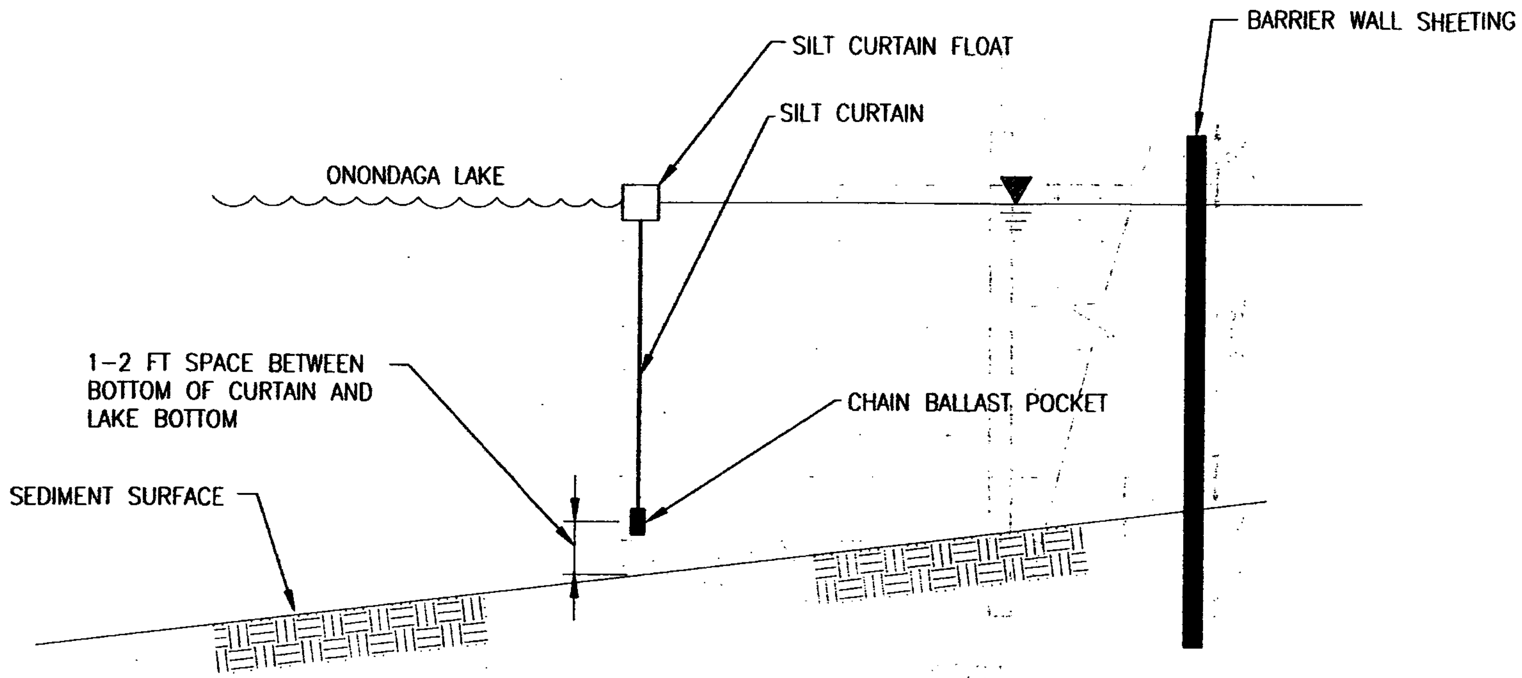
FIGURE 3

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

WILLIS IRM SITE ACCESS PLAN

Honeywell
EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

PARSONS
290 ELWOOD DAVIS ROAD • SUITE 312 • LIVERPOOL, N.Y. 13088 • 315/451-9560
OFFICES IN PRINCIPAL CITIES

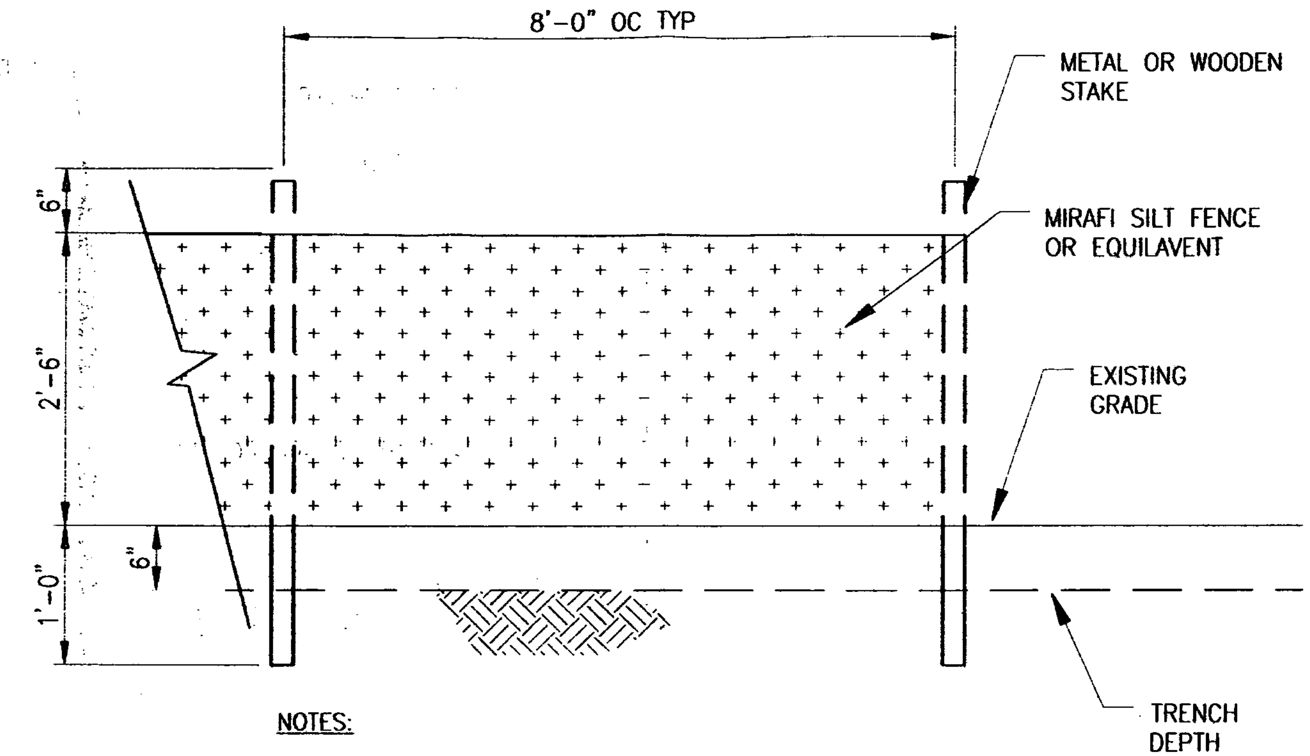


NOTE:

SILT CURTAIN ANCHORS NOT SHOWN FOR CLARITY. CONTRACTOR TO ANCHOR THE SILT CURTAIN TO SEDIMENT SURFACE EVERY 100 FT FROM TOP OF CURTAIN.

TYPICAL SILT CURTAIN DETAIL

NTS

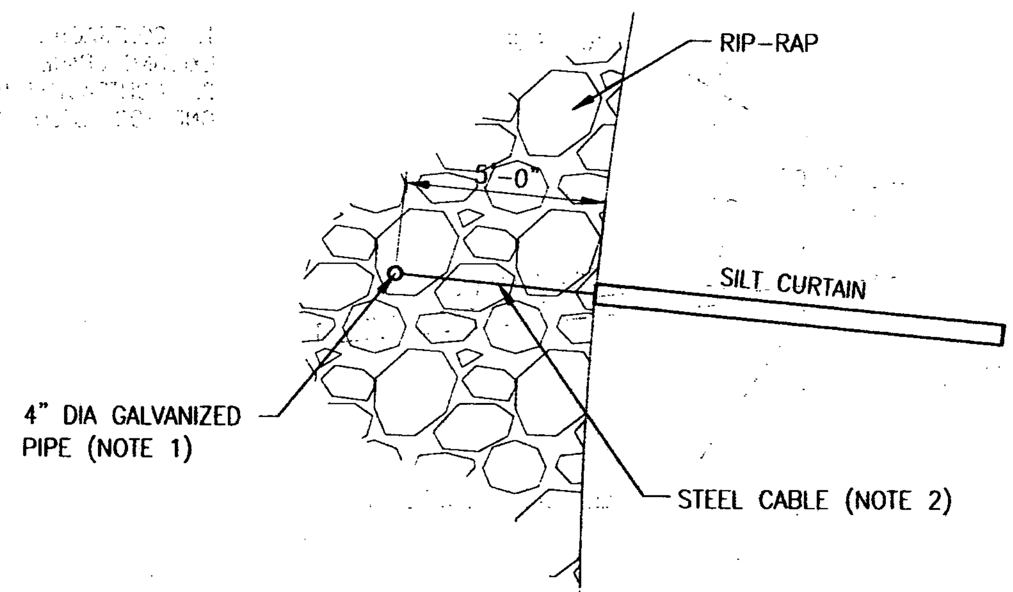


NOTES:

1. CONTRACTOR TO BURY SILT FENCE SIX INCHES BELOW EXISTING GRADE.
2. CONTRACTOR TO DRIVE METAL OR WOODEN STAKES ONE FOOT BELOW EXISTING GRADE.

TYPICAL SILT FENCE DETAIL

NTS



NOTES:

1. 4" GALVANIZED PIPE TO BE DRIVEN DOWN TO A MINIMUM DEPTH OF 4'-0", WITH AN EXTENSION ABOVE GRADE OF 5'-0".

2. STEEL CABLE SHALL BE 1/2" 6x7 STANDARD COARSE LAID WIRE ROPE, WITH A MINIMUM BREAKING STRENGTH OF 18,000 LBS.

TYPICAL SILT CURTAIN ANCHORING SYSTEM

NTS

FILE NAME: P:\HONEYWELL -SYR\444287 WILLIS AVENUE WALL\10.0 TECH\10.0 CAD\SK444287-C-002.DWG
PLOT DATE: 4/29/2008 4:14 PM PLOTTED BY: HALL, STEVE E

FIGURE 4

WILLIS AVENUE/SEMET TAR BEDS SITE
SYRACUSE, NEW YORK

WILLIS IRM SITE
ACCESS PLAN DETAILS

Honeywell

EMS ENGINEERING DEPARTMENT
101 COLUMBIA RD. BOX 2105
MORRISTOWN, NJ 07962

PARSONS

290 ELWOOD DAVIS ROAD • SUITE 312 • LIVERPOOL, N.Y. 13088 • 315/451-9560
OFFICES IN PRINCIPAL CITIES